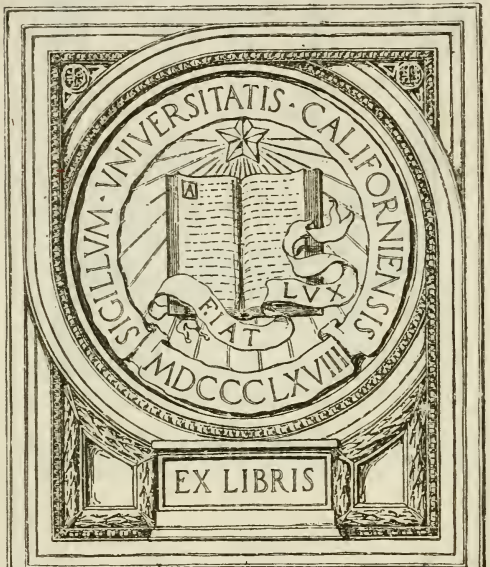
ELEMENTS OF PSYCHOLOGY

HILL'S SERIES



THE

ELEMENTS OF PSYCHOLOGY:

A TEXT-BOOK.

BY

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PRESIDENT HILL'S TEXT-BOOKS.

I.

THE ELEMENTS OF RHETORIC AND COMPOSITION.

II.

THE SCIENCE OF RHETORIC.

III.

THE ELEMENTS OF LOGIC.

IV.

THE ELEMENTS OF PSYCHOLOGY.

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PREFACE

Although the scientific method has been only recently applied to psychological investigation, it has produced a reconstruction of the sciences relating to the nature of man. It has not been found possible, however, to abandon the special method of self-analysis, or introspection, which alone furnishes the particular kind of facts upon which Psychology is based,—the phenomena of consciousness. By a careful application of this method by many observers, there has been accumulated a body of accepted facts universally admitted as verifiable. It is this *consensus* alone that renders any science possible. There was no science of Astronomy, of Botany, or of Geology, until there had been amassed an aggregate of verified and accepted facts to which the mind could apply systematic arrangement and nomenclature. While, therefore, the facts of Psychology are furnished by the individual consciousness, and in this sense are subjective and personal, the general *consensus* renders them fit for scientific use as verified facts and not mere opinions.

Although Psychology presents itself as a science, like every other science, it has its unsolved problems and its retinue of theories. It has so lately emerged from the purely speculative stage, that the theoretical element still

remains conspicuous. The future progress of Psychology will determine which of these theories shall become dominant. The necessity of an appeal to personal consciousness both for the facts and their interpretation justifies the citation of personal views and statements to a greater extent than in other departments of knowledge.

The text-book now offered to teachers and students has grown up in the author's class-room during a period of nearly ten years, and has been gradually adapted to the practical needs of those who could devote to the study only a single term of about three months. Great stress has been laid upon the careful definition of words, a progressive analysis, and the emphasis of the central truths of the science.

It is intended that *the paragraphs printed in the larger type should be learned for topical recitation* and that those printed in the smaller type should be read with care without close reproduction in the class-room.

The leading paragraphs have been readily comprehended by all the students who have ever attempted to study them. The secondary paragraphs are intended to interest the more active minds in acquiring a wider knowledge of the subject by presenting comments, citations, and theories which may lead to reflection and reading. These paragraphs are not essential to the continuity of the text printed in the larger type. One object in adding them is, to introduce to the notice of students the names of important thinkers and writers of whom they should have some knowledge. These will lead on to still others whose works are to be found only in foreign languages, to which references have been very rarely made because they would be practically useless to the beginner. The dates of the

birth and death of the writers quoted or referred to have been enclosed in parenthetical marks after the first mention of the name, except in the case of contemporaries, when only the date of the birth is given. These dates at once answer the question as to when the person lived. They may be learned or used only for reference, according to the preference of the teacher. The book thus serves as an introduction to the history of philosophy as well as to philosophy itself.

Special pains have been taken to apply the principles of Psychology to the practical problems of Education, in the hope that the value of the book might thus be enhanced for those who contemplate teaching and for all who are interested in the development of the psychical powers.

It is impossible for a writer on a scientific subject to specify all the sources from which his knowledge has been derived, but every direct quotation in this book is acknowledged by an explicit reference. An examination of these references will show that there are few works of importance in the English language bearing upon the subject to which the author is not indebted.

January 1, 1886.

CONTENTS

OR ANALYSIS.

INTRODUCTION.

PART I.—INTELLECT.

CHAPTER I.

PRESENTATIVE KNOWLEDGE.

TWO FORMS OF PRESENTATIVE KNOWLEDGE.

SECTION I.

SELF-CONSCIOUSNESS.

SECTION II.

SENSE-PERCEPTION.

SECTION III.

SENSE-INTERPRETATION.

CHAPTER II.

REPRESENTATIVE KNOWLEDGE.

DEFINITION AND DIVISION OF REPRESENTATIVE KNOWLEDGE.

SECTION I.

ASSOCIATION.

SECTION II.

PHANTASY.

SECTION III.

MEMORY.

SECTION IV.

IMAGINATION.

CHAPTER III.

ELABORATIVE KNOWLEDGE.

DEFINITION AND DIVISION OF ELABORATIVE KNOWLEDGE.

SECTION I.

CONCEPTION.

SECTION II.

JUDGMENT.

SECTION III.

REASONING.

CHAPTER IV.

CONSTITUTIVE KNOWLEDGE.

DEFINITION AND DIVISION OF CONSTITUTIVE KNOWLEDGE.

SECTION I.

BEING.

SECTION II.

CAUSE.

SECTION III.

SPACE.

SECTION IV.

TIME.

SECTION V.

THE DEVELOPMENT OF INTELLECT.

PART II.—SENSIBILITY.

CHAPTER I.

SENSATIONS.

CLASSIFICATION OF SENSATIONS.

SECTION I.

SIMPLE SENTIENCE.

SECTION II.

APPETITE.

CHAPTER II.

SENTIMENTS.

THE THREE CLASSES OF SENTIMENTS.

SECTION I.

EMOTION.

SECTION II.

DESIRE.

SECTION III.

AFFECTION.

SECTION IV.

THE DEVELOPMENT OF SENSIBILITY.

PART III.—WILL.

CHAPTER I.

INVOLUNTARY ACTIONS.

DIVISION OF THE SUBJECT.

SECTION I.

THE MOTOR MECHANISM.

SECTION II.

INSTINCTIVE ACTION.

SECTION III.

ACQUIRED ACTION.

CHAPTER II.

VOLUNTARY ACTION.

DIVISION OF THE SUBJECT.

SECTION I.

SOLICITATION.

SECTION II.

DELIBERATION.

SECTION III.

VOLITION.

SECTION IV.

THE DEVELOPMENT OF WILL.

ILLUSTRATIVE FIGURES.

1. Definition of Psychology.

Psychology (from the Greek *ψυχή, psyche*, soul, and *λόγος, logos*, discourse, or science) **is the science of the soul.** It is a science, not a philosophy; because it possesses the character of definite and positive knowledge derived from observation, not that of theory and speculation. It is the science of the soul, or conscious self, in its completeness, being broader in its scope than what is known as "**mental science**" or "**intellectual philosophy.**"

This definition merely limits, in a rude way, the subject matter of our study, indicating the *soul* or *conscious self*, as the subject of our investigation. The nature of the soul, so far as it may be discovered, will gradually appear as we proceed with our study. Every such formal definition is inadequate. **The term "Psychology"** has now come into general use to designate this department of study, having superseded the older and less precise designations. The word "soul" is also now more generally employed than "mind," which more strictly denotes the intellectual, or knowing, power of the soul. The adjective "psychical" has also largely taken the place of the more popular word "mental" in the later and more scientific discussions.[1]

2. The Sphere of Psychology.

In the constitution of man two systems are united:

(1) An **outer system,** to which we refer the sun, moon and stars, the earth and our own visible bodies ; and

(2) An **inner system,** to which we refer our pleasures and pains, our thoughts and desires, and the origin of many of our actions. **This inner system furnishes the facts of Psychology.**

The science, therefore, differs from the physical sciences in this, that the leading facts with which it deals lie open to the inspection of consciousness, while those of the physical sciences are apprehended through the organs of sense. Nature has thus provided for all the best facilities for this study, for its sphere is the inner circle of the conscious self.

We do not here raise any question as to the nature of the conscious self, or propose any metaphysical distinctions. **Metaphysics,** in its proper sense, is an inquiry into the ultimate nature and constitution of being. It is sometimes also called **Ontology,** or the science of being. We limit ourselves, for the present, to facts of observation, and, if metaphysical or ontological inferences arise in the progress of our study, it will be only as a logical necessity of the observed facts.

3. Sciences related to Psychology.

There are several sciences which are closely related to Psychology, either because of deriving their facts from the nature of man, or because of their supplying partial explanations of psychical phenomena. **Biology** treats of the general phenomena of life. **Physiology** deals with the processes and functions of the body, some of which are connected with the production of conscious states. **Anatomy**

treats of the form and structure of the bodily organs. **Pathology** deals with the conditions of health and disease, some of which affect consciousness. **Anthropology** is the science of the human species, showing that many of the phenomena which we discover in ourselves are common to our kind.

A few speculative writers have endeavored to push these sciences into the sphere of Psychology so as to cover its entire territory and make it seem to be superfluous. Some would regard it as a mere province of Biology. There has lately risen a school of **Physiological Psychologists,** who would attempt to explain all the facts of conscious life by purely physiological causes. Such efforts have been, so far, unsuccessful. Others, principally in Germany, would merge Psychology into Anthropology by founding it mainly on the study and comparison of different races of men, giving prominence to what is known as **Ethnological Psychology.** Still others would treat Human Psychology as a mere discussion of animal sentience and regard it as a branch of **Comparative Psychology,** ranking man as a single member of the animal kingdom. The reasons for regarding Psychology as an independent science will appear in our subsequent treatment.

4. The Relation of Psychology to Education.

Education aims to fit its subject for the realization of his destiny. It consists of two processes : (1) **instruction,** which imparts ideas ; and (2) **discipline,** which develops, expands, and regulates the powers. It is plain, that the educator should know as much as possible of the nature, powers, processes and laws of the soul, for his success is largely dependent upon this knowledge. **The study of Psychology, therefore, is essential to a preparation for teaching.**

The science of education is called **Pedagogics,** from a Greek word meaning a *conductor of children,* applied to the attendant who

accompanied them to school. Pedagogics is, in reality, little more than applied Psychology. Whoever understands the science of the soul, possesses the fundamental principles of the science of education. Experience alone can furnish the corresponding art. **The theory of teaching begins in Psychology,** and it has been a leading idea in the composition of this text-book to render it serviceable to those who contemplate teaching as a profession.

5. The Psychological Method.

As Psychology is the science of the soul itself, the method by which it must be pursued differs from that of other sciences. The physical sciences deal with objective, or external, facts, which can be observed only through the senses. Psychology deals only with subjective, or interior, facts, and hence the senses cannot be employed in observing them. The psychological method consists in the analysis of consciousness, or of the interior knowing self and its states. This method is called **introspective** (from the Latin *intro,* within, and *specĕre,* to look).

In so far as Psychology is a science apart from the sciences that have been named as related to it, it must discover its facts by introspection, or internal observation. **It may, however, supplement its own results by borrowing from other sources.** Its claim to being an independent science must stand or fall with its ability to vindicate its power of adducing facts not otherwise observable. This seems easy, for no method of external investigation can discover the facts of consciousness, and no one can deny that there are such facts. It may derive aid from Physiology, observation of the lower animals, the outward life of children, the phenomena of mental disease, the manners and customs of different races of men, and the study of human languages and institutions, which express the inner life of man. But not one of these interesting data would have any intelligible meaning, except as interpreted to our consciousness and explained in terms of our conscious experience.

6. The Validity of the Method.

The validity of the psychological, or introspective, method has been called in question by **Auguste Comte** (1797-1857), a French philosopher, **Henry Maudsley** (1835-), an English physiologist, and others of less note. Their main objection is, that, in trying to observe its present state, the conscious self destroys that state by producing another, if it can even be admitted that the soul can modify its states in any way whatever. These are purely speculative difficulties. It is a simple fact of consciousness that the soul does observe its own states. The testimony of consciousness cannot be denied without self-contradiction; for, he who doubts it either doubts arbitrarily, or else he relies upon consciousness for the affirmation of his doubt. The madman's delusion only strengthens our faith in the trustworthiness of consciousness, for it is because of our belief in its veracity in reporting an abnormal state that we pronounce him insane rather than a willful deceiver.

Comte's argument against introspection is: "In order to observe, your intellect must pause from activity, yet it is this very activity which you want to observe. If you cannot effect the pause, you cannot observe; if you do effect it, there is nothing to observe."[2] **Henry Calderwood** (1830-), a Scotch writer and professor, offers the following **refutation**: "The argument involves neglect of the following facts: that intellectual activity implies consciousness; that attention to its own states is a possibility of mind; that repetition, in consequence of the same act, leads to increased familiarity with it; that memory admits of the recall of what has previously passed through consciousness. There is, therefore, no necessity for a pause in order to attain knowledge of personal activity."[3] **Maudsley** accepts Comte's argument and adds: "(*a*) There are but few individuals who are capable of attending to the succession of

phenomena in their own minds; (*b*) there is no agreement between those who have acquired the power of introspection; (*c*) as long as you cannot effect the pause necessary for self-contemplation, there can be no observation of the current of activity; if the pause is effected, there is nothing to observe."[4] Even if but a few can use the introspective method, and they do not agree, the point is conceded. As a matter of fact, all the members of an ordinary class can use it, and they usually agree in their results upon important points.

7. The Primary Affirmations of the Soul.

The soul begins the analysis of itself with three primary affirmations, in which all agree, which are not derived from each other, but are universally, necessarily and immediately known to every being capable of such analysis. These affirmations are incapable of proof, for all proof is either by induction or deduction, and both these processes are impossible without these affirmations. They are as follows :

(1) **The Affirmation of Existence,** in which the soul affirms to itself the fact that something *is,* or has *being.* This is the discrimination between *being* and *non-being,* or *something* and *nothing.*

(2) **The Affirmation of Co-existence,** in which the soul affirms to itself the fact that something is which is *not self,* which has being that is not *its* being. This is the distinction between the *Ego* and the *non-Ego,* or between *self* and *non-self.*

(3) **The Affirmation of Persistence,** in which the soul affirms to itself that some forms of being in existence *now* were known by it to be in existence *before* now and are the *same.* This is the discrimination between *stability* and *change,* or *permanence* and *mutability.*

These affirmations of the soul show its **structural capacity for self-knowledge.** That which each one of us calls "Self," "I," or "*Ego*," knows being, knows itself as being and other being as not itself, knows itself as having been and as being that which was. Here, again, we wish to avoid metaphysical or ontological inferences. Each student of these doctrines must decide for himself whether or not he necessarily and immediately makes these affirmations as soon as his thought is directed to them. Nothing is here affirmed as to the nature, the origin, or the cause of this self-knowing being, the soul.

8. The Three Elemental Phenomena of the Soul.

If we examine the contents of consciousness, we find three different kinds of phenomena which are elemental but enter into composition in our psychical experience:

(1) **Knowledge** is a condition of certitude which the soul discovers in itself whenever objects are presented. Thus, I take this book in my hand and I know that I have it, that it is this book, and that it differs from other surrounding objects.

(2) **Feeling** is a state of the soul different from knowledge, not easily described, but readily discriminated. Thus, I touch the book with my finger and, in addition to the knowledge that I touch it, there rises in me what I call a *feeling*, distinct from the knowledge.

(3) **Volition** is an act of the soul different from both knowledge and feeling. I lift the book from the table. It is *my* act. It has originated in *me*, not in the book or in the table.

These elemental phenomena accompany one another, but are not identical, and cannot be resolved into or derived from one another.

9. The Three Elemental Powers of the Soul.

To these three elemental phenomena of the soul correspond three powers, or faculties, which nearly all modern psychologists recognize as different and irreducible. They are:

(1) **Intellect,** or the power of knowing, exercised when we are conscious of a fact or relation as an object of knowledge.

(2) **Sensibility,** or power of feeling, exercised when one feels pain on inflicting a wound or pleasure on hearing agreeable news.

(3) **Will,** or power of self-direction, exercised when one forms a purpose of action and resolves to perform it.

These powers are possessed by the same being and are exercised at the same time, so that, notwithstanding its variety of capabilities, **we must believe in the unity of the soul.**

The word "**faculty**" is derived from the Latin *facultas*, from *facĕre*, to do, to make, and signifies a power or ability. The German philosopher, **J. F. Herbart** (1776-1841), denied the existence of psychical faculties, but has found few followers in this denial. Before the time of the German philosopher, **Immanuel Kant** (1724-1804), a two-fold division of faculties prevailed. **Aristotle** (B.C. 384-322) recognized two faculties, "thought" (*νοῦς*) and "desire" (*ὄρεξις*). **Thomas Reid** (1710-1796), a Scotch metaphysician, and his immediate followers, treated of the "intellectual powers" and the "active powers." In these schemes, feeling was divided between the knowing and the acting faculties. Since the Scotch philosopher, **Sir William Hamilton** (1788-1856), who divided the soul into (1) "intellect," (2) "sensibility," and (3) "will," and the phenomena of consciousness into (1) "cognitions," (2) "feelings," and (3) "conations," the three-fold division has been almost universal among those who admit separate faculties at all. Even those who put "association of ideas" in the place of faculties, recognize the three elemental

phenomena, knowledge, feeling and volition. Those who make much of evolution in explaining the phenomena of consciousness, as the Scotch psychologist, **Alexander Bain** (1818-), and the English philosopher, **Herbert Spencer** (1820-), attempt to derive knowledge and volition by development from feeling.

The idea of the **soul's unity** is thus expressed by **Hermann Ulrici** (1806-1884), a German philosopher: "To the individual mutable moments of experience are opposed a continuity and steadfastness of self-consciousness, and by the side of the multifarious, variously shifting contents there comes into play at every moment the consciousness of the unity and identity of the *Ego;* and this consciousness, though it may be dim and undefined, attends every act of our intellectual life. The *Ego* which now apprehends itself as sentient or percipient, now putting forth effort, willing, etc., knows itself at the same time as *one and the same*, the abiding self. . . . We implicitly contrast ourself as unity with the mutation and manifoldness of our psychical life." [5]

10. Division of Psychology.

In a systematic study of the phenomena and faculties of the soul, without forgetting the natural unity that combines these, we must follow the example of the anatomists and study the different elements separately. Adopting the generally accepted division of the faculties of the soul, we shall now treat of

I. Intellect.

II. Sensibility.

III. Will.

References: (1) For the discussion of these and other terms, see Fleming's *Vocabulary of Philosophy*, under each word. (2) *The Positive Philosophy of Auguste Comte* (Martineau's Translation), I., p. 11. (3) Calderwood's *Handbook of Moral Philosophy*, p. 5. (4) Maudsley's *The Physiology of Mind* (American Edition), pp. 16, 17. (5) Fleming's *Vocabulary*, p. 876.

GENERAL CONSPECTUS.

- **Psychology:**
  - **Part I.—Intellect.**
    - Chapter I.—Presentative Knowledge.
      - *Sect. 1.—Self-consciousness.*
      - *Sect. 2.—Sense-perception.*
      - *Sect. 3.—Sense-interpretation.*
    - Chapter II.—Representative Knowledge.
      - *Sect. 1.—Association.*
      - *Sect. 2.—Phantasy.*
      - *Sect. 3.—Memory.*
      - *Sect. 4.—Imagination*
    - Chapter III.—Elaborative Knowledge.
      - *Sect. 1.—Conception.*
      - *Sect. 2.—Judgment.*
      - *Sect. 3.—Reasoning.*
    - Chapter IV.—Constitutive Knowledge.
      - *Sect. 1.—Being.*
      - *Sect. 2.—Cause.*
      - *Sect. 3.—Space.*
      - *Sect. 4.—Time.*
      - *Sect. 5.—The Development of Intellect.*
  - **Part II.—Sensibility.**
    - Chapter I.—Sensations.
      - *Sect. 1.—Simple Sentience.*
      - *Sect. 2.—Appetite.*
    - Chapter II.—Sentiments.
      - *Sect. 1.—Emotion.*
      - *Sect. 2.—Desire.*
      - *Sect. 3.—Affection.*
      - *Sect. 4.—The Development of Sensibility.*
  - **Part III.—Will.**
    - Chapter I.—Involuntary Actions.
      - *Sect. 1.—The Motor Mechanism.*
      - *Sect. 2.—Instinctive Action.*
      - *Sect. 3.—Acquired Action.*
    - Chapter II.—Voluntary Actions.
      - *Sect. 1.—Solicitation.*
      - *Sect. 2.—Deliberation.*
      - *Sect. 3.—Volition.*
      - *Sect. 4.—The Development of Will.*

PSYCHOLOGY.

PART I.—INTELLECT.

1. Definition of Intellect.

Intellect is the faculty of knowing. The word is derived from the Latin *inter*, between, and *legĕre*, to gather, and signifies the power of discrimination, or discernment of resemblances and differences, which the soul makes in its experiences. Knowledge is gathered in the transition from one experience to another in which resemblances or differences appear. An acute Intellect discerns these sharply, a dull Intellect either imperfectly or not at all.

Bain has named as the three fundamental attributes of Intellect, (1) **Discrimination,** or consciousness of difference, (2) **Consciousness of Agreement,** and (3) **Retentiveness,** or power of retaining impressions.[1] **James Sully** (1842–), an English psychologist, rejects Bain's co-ordination of Retentiveness with Discrimination, on the ground that Retentiveness is rather a condition than a form of knowing. He supplies a name for Bain's second function of Intellect, **Assimilation.** According to Sully's analysis, Intellect has two functions: (1) **Discrimination,** the knowing of differences; and (2) **Assimilation,** the knowing of resemblances.[2]

As an **example of intellectual action,** suppose a person endowed with no organ of sense but an eye. Suppose the eye to be filled with blue light. The person would have a sensation of *blue.* Now sup-

pose the blue light to be suddenly removed and a red light substituted. The person would have a sensation of *red* light. In the transition from the blue to the red, a knowledge of difference would be gathered and also a knowledge of resemblance, the two sensations belonging to the same order, sensations of color. Unusual power of discrimination is known as "sharpness" of Intellect; unusual power of assimilation, as "breadth" of Intellect.

2. Definition of Knowledge.

Knowledge is that condition of certitude in the soul that arises when realities or relations are consciously apprehended. It is the correlative of being. When perfect, it is identified with **truth,** which is the correspondence between consciousness and reality. When the conditions of knowledge seem to the Intellect to be fulfilled, the soul accepts the corresponding object of knowledge as really existing.

We must distinguish knowledge from **feeling,** which is merely a sentient condition; from **volition,** which is a personal determination; from **doubt,** which is the soul's hesitation with regard to a proposition; and from **belief,** which is the soul's assent to a proposition without positive knowledge.

3. Various Forms of Knowledge.

Our different forms of knowledge are most conveniently classified according to the ways in which they are acquired.

(1) Some knowledge is presented immediately to the soul when it attends to what is within or about it, as the soul's knowledge of its own states and the simplest perceptions of the senses. This is called **Presentative Knowledge.**

(2) Such knowledge, at a later time, is brought to con-

sciousness again, either in the old or in new relations, having in some way been reproduced within us. This is called **Representative Knowledge.**

(3) Still other knowledge is given us neither by presentation nor by representation, but is the result of our own psychical action itself; as when a chemist affirms that all acids turn blue litmus paper red, or that there is an acid in a given compound because it turns the paper red. This is called **Elaborative Knowledge.**

(4) Finally, we have a fourth kind of knowledge that is not acquired by any of these modes, but is obtained by stating those postulates, or assumed truths, that underlie and are implied in the whole fabric of our knowledge, and without which all would be without unity, validity, or foundation. This is called **Constitutive Knowledge.**

4. Division of the Subject.

For the sake of a systematic order and because the outline just given shows the progress of Intellect in its activity, we shall treat of each of these four kinds of knowledge in a separate chapter, as follows:

(1) ***Presentative Knowledge;***
(2) ***Representative Knowledge;***
(3) ***Elaborative Knowledge;*** and
(4) ***Constitutive Knowledge.***

References: (1) Bain's *The Senses and the Intellect,* p. 321. (2) Sully's *Outlines of Psychology,* pp. 26, 27.

CHAPTER I.

PRESENTATIVE KNOWLEDGE.

TWO FORMS OF PRESENTATIVE KNOWLEDGE.

Presentative knowledge, or knowledge presented immediately to the soul, is of two kinds: (1) that which is presented in **Self-consciousness**; and (2) that which is furnished through **Sense-perception.**

SECTION I.

SELF-CONSCIOUSNESS.

1. Self-consciousness Defined.

Self-consciousness is the soul's knowledge of itself. In every act of knowledge there are three essential elements: (1) the **knowing subject**, or self-conscious **Ego**; (2) the **object of knowledge**; and (3) the **states and actions of the soul** as affected by the object of knowledge. The knowing self may not be prominent in the state of consciousness, but is essential to it. The object of knowledge may be either external or internal. The states and actions of the soul as affected by the object of knowledge may themselves, in turn, become objects of knowledge. All three of these elements are included in what we designate by the word "**consciousness**," "Self-consciousness" being limited to the soul's knowledge of itself as present in the

field of consciousness. **Self-consciousness is the foundation of all our knowledge,** because the soul's testimony to its own experiences is the only evidence of their reality.

Consciousness cannot be defined. It is the pre-condition of any definition whatever. Every attempt to define it, therefore, moves in a circle. It is a fundamental and universal fact of psychical existence. While indefinable, it is known to all, and the word may be used without attempt at definition. Psychological science can study its forms and conditions, but everywhere assumes its existence in the beings of which it treats. To the unconscious, no science is possible. The reality of consciousness has never been denied. **Self-consciousness**, however, implies the presence in consciousness of a self-known subject, or being that knows itself as being conscious.

Every denial of Self-consciousness tends to destroy the foundations of all knowledge; for, if there is no conscious self that knows itself as a present witness to psychical experiences, we are without evidence that these experiences have taken place and the certainty of knowledge is questionable. A great French philosopher, **René Descartes** (1596–1650), sometimes called the "Father of Modern Psychology," began his philosophizing by doubting everything about which he could not be absolutely certain. At last, when he came to the question of his own existence, he reached a point beyond which doubt could not go. "*Cogito, ergo sum,*" *I think, therefore, I am,* seemed to him beyond the possibility of doubt. Thinking does, indeed, seem impossible, unless the being that thinks, is. But *I* think, therefore, *I am.* Descartes has put in the form of an argument what it would seem more natural to regard as an intuition, or truth directly and immediately known without argument and, in reality, necessary to the existence of any argument. This is, probably, what Descartes really meant, for his argument is that the very idea of thinking implies the existence of a thinker as a pre-condition.

2. Hume's Denial of Self-consciousness.

David Hume (1711–1776), the Scotch skeptic, says: "For my part, when I enter most intimately into what I

call *myself,* I always stumble on some particular perception or other, of heat or cold, light or shade, love or hate, pain or pleasure. I can never catch myself at any time without a perception, and never can observe anything but the perception. . . . One may, perhaps, perceive something simple and continued that he calls *himself,* though I am certain there is no such principle in me."[1] In this denial of Self-consciousness, Hume unwittingly admits: (1) that he can enter "most intimately" into what he calls *himself;* (2) that he *always* stumbles on some particular perception, thus confessing the continuity of being which he formally denies; (3) that he is *certain,* from continued self-inspection, that there is no continued principle in himself. As for his "never catching himself *without* a perception," Calderwood very acutely remarks, that, to prove his Self-consciousness, it is sufficient for him to catch himself *with* one.

John Locke (1632–1704), an English philosopher of great celebrity, advanced a doctrine of Representative Ideas that seemed to involve a denial of our immediate knowledge of matter. **George Berkeley** (1684–1753), an Irish metaphysician and the founder of British Idealism, followed up Locke's doctrine and attempted to show that, assuming its truth, as he did, we have no knowledge, *except of ideas.* The whole universe was thus construed as a product of mind and a purely spiritual existence. **Hume** attacked Berkeley's doctrine by trying to show that, in following out the same principle, we have only an idea of mind as well as only an idea of matter; that, in short, we know nothing as real and substantial, but only phenomena, or passing appearances. For Hume the soul is nothing but a series of sensations. **James Mill** (1773–1836), an English philosopher, and his more distinguished son, named in the following paragraph, have embraced and advocated this doctrine of Hume's. It is historically the foundation of modern **Agnosticism** (from the Greek *a, alpha,* implying negation, and *γνῶσις, gnosis,* knowledge), or philosophic ignorance.

3. Mill on Self-consciousness.

John Stuart Mill (1806–1873), one of the most noted of recent English philosophers, defines the soul as "a series of feelings," "a thread of consciousness." Although he finds no difficulty in resolving matter into "the permanent possibility of sensations," he admits that, "If we speak of the mind as a series of feelings, we are obliged to complete the statement by calling it a series of feelings which is aware of itself as past and future; and we are reduced to the alternative of believing that the mind, or *Ego*, is something different from any series of feelings, or possibilities of them; or of accepting the paradox, that something which is *ex hypothesi* but a series of feelings, can be aware of itself as a series."[2] He adds: "The theory cannot be expressed in any terms which do not deny its truth." Unless we are willing to found our science on a mental paradox and a verbal contradiction, we cannot follow Hume and Mill in the denial of Self-consciousness.

The following paragraph by **Borden P. Bowne** (1847–), an American psychologist, seems to be a **refutation of Mill's doctrine**: "Let *a*, *b*, *c*, and *d* be respectively a sensation of color, of odor, of taste, and of sound. Plainly no consciousness can be built out of these elements. The color knows nothing of the odor; the taste knows nothing of the sound. Each is a particular and isolated unit, and must remain so until some common subject, *M*, is given, in the unity of whose consciousness these elements may be united. For as long as *a*, *b*, *c*, etc., are all, there is no common consciousness, and hence no rational consciousness, at all. We conclude, then, that the mental life, both in its elements and in its combinations, must have a subject. It is not only unintelligible, it is impossible, without it."[3]

4. Spencer's Denial of Immediate Self-consciousness.

Herbert Spencer does not deny Self-consciousness, but *immediate* Self-consciousness. He says: "No one is conscious of what he *is*, but of what he *was* a moment before. . . . It is impossible to be at the same time that which regards and that which is regarded."[4] This denial of immediate self-knowledge proceeds from the theoretical ground that there is a contradiction in being at the same time observer and observed. No such impossibility has been proved. If it were, it would result in the same uncertainty of all our knowledge which Hume's doctrine involves. One could never say, "I *know*," but only "I *knew*." But how could one say "*I* knew," if at the time when he knew he did not know? Spencer's doctrine involves an absurdity. The simple fact of consciousness is that **we know immediately that we know,** without an interval of time.

Spencer is the leading representative of Modern Agnosticism, and, with such psychological foundations, it would seem difficult for him to be certain of anything. He is, however, more consistent than Mill, for his doctrine involves no denial of the substantial being of the soul, simply our ignorance of it. Spencer's idea that time must intervene between the existence of a state of consciousness and our knowledge of it as our state, may grow out of conceptions of thought as a physical function, requiring time for transmission. Sense-impressions, as we shall see later on, require time for passing from the sense-organs to the brain, and this time is measurable. It has never been proved, however, that any time intervenes between the production of a state of consciousness and our knowledge of it as ours. Doubtless we are conscious of impressions received by the brain *after* the brain has received them. This, however, is not the point. We are conscious of self *as self is*, or not at all.

5. The Continuity of Self-consciousness.

Different opinions have been held concerning the continuity or periodicity of Self-consciousness. **Hamilton** held that the soul is never unconscious of itself, even during sleep. Many of its experiences are lost from memory, leaving blank intervals between the experiences distinctly recalled. **Locke,** on the other hand, maintained that the soul is conscious only during certain periods, and hat at other times, as in deep sleep, or during swoons, it is absolutely unconscious. The question is of small practical importance; for, though it be shown that the soul is periodically rather than constantly conscious, it knows itself on regaining consciousness as having been before. If the soul still knows itself, after a period of unconsciousness, it is certainly something very different from a "series of feelings" or a "thread of consciousness."

Hamilton's defense of the continuity of consciousness is very ingenious and merits a careful reading. It may be found in his "Lectures on Metaphysics," p. 216 *et seq.* These arguments have been repeated and reinforced with considerable skill by an American psychologist, **John Bascom** (1827–), in his "Science of Mind," p. 72 *et seq.* **Locke's doctrine** may be found in his "Essay concerning Human Understanding," Book II., Chap. I.

6. Two Forms of Self-consciousness.

Psychologists have distinguished two forms of Self-consciousness, which they call Spontaneous and Reflective. The distinction has value mainly in showing the different degrees of intensity with which Self-consciousness is realized. **Spontaneous Self-consciousness** is intended to

designate that low degree of self-knowledge which all men possess. **Reflective Self-consciousness** is meant to signify that energetic realization of self-existence that is acquired by profound reflection upon the nature and causes of our being. The difference between them is one of degree alone. It consists in the greater degree of **Attention** (from the Latin *ad*, toward, and *tendĕre*, to stretch), or concentration of consciousness, with which Reflective Self-consciousness is accompanied.

Attention is sometimes treated by writers on Psychology as if it were a special intellectual faculty. It is simply a concentration of consciousness upon a particular object. It is caused either by some powerful external stimulation of interest, in which case it is involuntary; or by some personal volition, in which case it is voluntary. In every case, it is the result of something wholly external to the soul, or of an exercise of Will, or of a habit produced by one or the other of these causes. The treatment of this topic, therefore, falls most naturally under the third part of our division of Psychology, as a mode of action connected with the Will.

7. Origin of Reflective Self-consciousness.

The higher form of Self-consciousness is developed by the reflective use of the intellectual powers. It is seldom found in the very young, and always when found in them indicates an abnormal condition. The acquisition of materials for reflection is the first natural step in the progress of development. Reflection ought then to follow. If it follows too early, the soul "feeds upon itself," producing an abnormal result. Though liable to abuse, it is the necessary attainment of the philosopher and the man of science, and is cultivated by close self-examination and self-analysis.

8. Normal Forms of Reflective Self-consciousness.

There are two forms of Reflective Self-consciousness that are entirely normal and exceedingly useful. They are :

(1) **The Philosophical,** which impels the Intellect to observe closely, compare widely and seek diligently for causes and principles. It seems to be the peculiar possession of great men, who differ from common men not so much in the special brilliancy of any one faculty as in the urgency of mind by which they are impelled to great discoveries or enterprises.

(2) **The Ethical,** which habitually compares self with a moral standard, with a view to self-improvement. **Noah Porter** (1811–), an American metaphysician, says : " Christianity has trained the Intellect of the human race to this activity, and hence has been so efficient in educating and elevating the masses of men, even where it has furnished little formal intellectual culture." [5]

9. Abnormal Forms of Reflective Self-consciousness.

There are several forms of Reflective Self-consciousness that are unquestionably abnormal. They are as follows :

(1) **The Precocious** form is manifested in some children in whom the subjective life has too early come to dominate over the objective. The natural sphere of mental activity for a child is that of his perceptions. He should be chiefly interested in the objects around him, not in himself. The perfectly normal child is largely occupied with the outer world.

For this there is a physical, as well as a psychical reason. The brain and nervous system increase in size rapidly until about the seventh year. After this the brain increases but little in size, but the osseous and muscular systems increase rapidly, until full growth is attained. This time of growth is the period for the co-ordination of the nervous and muscular systems with the outer world. If it is not made then, the difficulty increases later on. If too much reflection is required, the delicate brain is too severely taxed before it has attained its maximum of power and the free activities necessary to what may be called "terminal," as distinguished from "central," growth are rendered impossible.

(2) **The Egotistic** form consists in an unnatural interest in self and a nervous anxiety about one's appearance or reputation or the impression one is making. It causes one to blush if he is noticed, and to be sulky if he is overlooked. It leads to affectation in society and thought and often results in positive unhappiness.

(3) **The Hypochondriacal** form is usually the product of some chronic disease which leads the patient to be always thinking of his own sensations and always imagining that they are to become worse, without hope of betterment. People thus afflicted exaggerate their own sufferings and are sometimes confirmed in their abnormal states by sympathetic friends who encourage their delusions. Hypochondria is often Nature's penalty for inordinate selfishness.

10. The Relation of Self-consciousness to Education.

Education is the unfolding, or drawing out, of innate powers, while **training** is the impressing of another's will upon the activities of the being trained. The lower animals may be trained, but they cannot be educated. We

can compel them to do our will, but we cannot draw out powers which they do not possess, or develop powers within them to whose production they do not conspire. The first condition of education, in any high sense, is the existence of a Self-consciousness that will respond to our efforts to develop latent powers. Nothing can be educated that cannot say, *"I."* Nothing is beyond the hope of education that can say, *"I will try."* Every thing pivots upon this realization of self. Laura Bridgman[6] could be educated, though she was blind and deaf. She could say, "I," not orally, for she was dumb, but mentally. She could respond to intelligent communications through the sense of touch alone, because she possessed self-conscious intelligence. No motives to learn, except physical motives, can be offered to a being who does not know that he belongs to a higher order. The human child becomes educable when he arrives at the knowledge of himself as self-conscious. Prior to that, he is susceptible of training, but not of education.

In this section, on "Self-consciousness," we have considered:—

1. ***Self-consciousness Defined.***
2. ***Hume's Denial of Self-consciousness.***
3. ***Mill on Self-consciousness.***
4. ***Spencer's Denial of Immediate Self-consciousness.***
5. ***The Continuity of Self-consciousness.***
6. ***Two Forms of Self-consciousness.***
7. ***Origin of Reflective Self-consciousness.***
8. ***Normal Forms of Reflective Self-consciousness.***
9. ***Abnormal Forms of Reflective Self-consciousness.***
10. ***The Relation of Self-consciousness to Education.***

REFERENCES: (1) Hume's *Treatise of Human Nature*, p. 321. (2) Mill's *Examination of Sir William Hamilton's Philosophy*, I., pp. 260, 262. (3) Bowne's *Introduction to Psychological Theory*, p. 13. (4) Spencer's *Principles of Psychology*, Part II., Chap. I. (5) Porter's *Human Intellect*, p. 106. (6) For an account of Laura Bridgman, see her *Life*, by Mary Smith Lamson; for a shorter, but very good, account, see the article by G. Stanley Hall, in *Mind*, reprinted in his *Aspects of German Culture*, pp. 237, 276.

SECTION II.

SENSE-PERCEPTION.

1. Sense-perception Defined.

Sense-perception is the soul's knowledge of material objects. The word "**perception**" (from the Latin *per*, through, and *capĕre*, to take, implying a taking through an organ of sense) is used to designate a *power*, an *act*, and even an *object*. Thus we say, "The soul has *perception*," where we mean that the soul has *power* of perception. Again, we say, "My *perception* of that sound is not acute," where we understand the particular *act* of perception. Finally, we say, "Do you recall the *perceptions* you had during your walk?" where the reference is to certain *objects* perceived.

The analysis of Sense-perception is difficult on account of the complex character of an act of perception and the psycho-physical relations involved. Every perception is accompanied with some degree of sensation, which, as mere feeling and not knowledge, must be separated in the analysis from the perception itself. Previous perceptions, revived through the representative power, are always blending themselves with present perceptions. Acts of judgment also are mingled with what we take for pure perceptions in a man-

ner almost incredible until the fact is demonstrated. But the principal difficulty, and one that has given rise to more discussion than any other single problem of Psychology, is the discovery of the line of separation between the functions of the sense-organs and the powers of the soul.

2. The Two Elements in Sense-perception.

There are two elements in an act of Sense-perception. The first is the act of **perception proper,** by which the external object is known. The second is the state of the soul in performing the act of perception and is called a **sensation.** The first belongs to the sphere of Intellect, the second to the sphere of Sensibility.

(1) **Perception proper has the following characteristics:**

(*a*) It is an act of *knowledge.*

(*b*) It gives knowledge of a *non-Ego.*

(*c*) It gives knowledge of a *space-occupying* non-Ego.

(2) **Sensation proper has the following characteristics:**

(*a*) It is a state of the *soul.*

(*b*) It is a form of *feeling* connected with the bodily organism.

(*c*) It is a feeling that may be *localized in the organism.*

As an example of Sense-perception, involving these two elements, take the case of knowing an object, say a knife, by touch. There is the perception of *what* the object is, and it is known as not-Self, and as occupying a certain limited and defined space. But certain states of *feeling* are likewise induced. I feel the sharp edge of the blade on my thumb and localize there a sensation, at first indifferent, but, as I press harder against the edge, becoming

painful. We have, then, *knowledge* and *feeling*, but the knowledge is acquired *through* the feeling.

Hamilton traces back the **history of this distinction** through Reid and others to **Plotinus** (205–270), a Neo-Platonic philosopher of Alexandria. Hamilton considers Reid's account of the distinction as wanting in precision and gives a restatement of his own. He also lays down the following **law**: "Knowledge and feeling,—perception and sensation,—though always co-existent, are always in the inverse ratio of each other." He adds: "Above a certain limit, perception declines, in proportion as sensation rises. Thus, in the sense of sight, if the impression be strong, we are dazzled, blinded, and consciousness is limited to the pain or pleasure of the sensation, in the intensity of which perception is lost."[1]

3. The Conditions of Sense-perception.

Sense-perception takes place only under the following conditions: (1) There must be a **nervous organism,** adapted to receiving and conveying impressions; (2) there must be some **external excitant,** capable of furnishing an impression; (3) there must be an **actual excitation** of the organism by the excitant.

(1) **The nervous organism in man** consists of the sympathetic and the cerebro-spinal systems. With the former we are not at present concerned. The **cerebro-spinal system** consists of the **brain** (see Figures 1, 2, 3, 4, 5, 6, and 7, at the end of the text), the **medulla oblongata** (see Figures 2 and 7), and the **spinal cord** (see Figures 1, 2, and 3), with their **attachments** (see Figures 1, 2, and 3) and **ramifications in the sense-organs** (see Figures 8 to 17). This organism is composed of **two kinds of matter,** (*a*) the **gray,** which is cellular and is supposed to be the source of nervous energy (see Figure 8, *A*); and (*b*) the **white,** which is fibrous and furnishes lines for the transmission of nerv-

ous currents (see Figure 8, *B*). Considering the whole as a telegraphic system, the gray matter takes the place of batteries and the white matter that of wires. The conducting fibres are grouped in *fasciculi*, or bundles, in the manner of a cable. They are all adapted to the transmission of impressions, but not all in the same direction. The **afferent** (from the Latin *ad*, to, and *ferre*, to bear), or **sensor, nerves** are so placed as to receive impressions from the outer world, which they convey inward to the brain. The **efferent** (from the Latin *e*, out, and *ferre*, to bear), or **motor, nerves** are so placed as to convey impulses outward from the brain to the muscles to which they are attached.

The localization of special functions in the brain is an interesting, but still an open, question. A celebrated Scotch physiologist, **David Ferrier** (1843–), has attempted, in his great work on "The Functions of the Brain," to demonstrate, by means of experiments made on lower animals, that certain particular regions of the brain are devoted to the performance of certain particular functions. These are divided into sensor centres and motor centres. The sensor centres each receive particular kinds of impressions. There are the auditory, or hearing, centre; the visual, or seeing, centre; the gustatory, or tasting, centre; the olfactory, or smelling, centre; and the tactual, or touching, centre. In a similar manner the motor centres are divided. It is probably true, that, in a general sense, there are such particular centres, though the imaginary distribution of them employed in the pseudo-science of **Phrenology** cannot be sustained on scientific ground and the experimental distribution attempted by Ferrier is not universally admitted. Every theory of localization of function has been denied by the English physiologist and writer, **George Henry Lewes** (1817–1878), who says: "The physiological properties of the nervous system are inseparable from every segment of that system; and the functions are the manifestation of those properties as determined by the special organs with the co-operation of all."[1] Perhaps a higher authority is the German

experimenter, **Goltz**, who has concluded, on the basis of experiment, that "The hypothesis of circumscribed centres subserving special functions in the cerebral cortex is untenable."[3] **George Croom Robertson** (1842–), the editor of the English psychological quarterly, "Mind," says, in reviewing the claims of the rival experimenters: "Goltz's conception of the intricate constitution and working of the brain, so far as he has yet shadowed it forth, must be said to come much nearer [than that of Ferrier] to meeting the requirements which psychology would make of physiology; and, so long as such facts can be produced as Goltz has recorded in his memoirs, it is hard to believe that Ferrier rightly interprets the different facts which he on his side may now be allowed to have established."[4]

(2) If there were no **external excitants,** the nervous organism would receive no impressions to transmit. The outer world, however, is a system of forces that continually act upon the sensor nerves. The waves of light, during a large part of every day, do not cease to beat upon the eye, whose thin protecting covering, even when closed, does not effectually exclude the luminous flood. The undulations of the air are even more obtrusive and pour themselves incessantly upon the ear, ebbing a little only for a few hours in the night. Odors, savory and unsavory, permeate the air and compel the nostril to inhale them. Surfaces surround us everywhere, some of which the force of gravity compels us to rest upon, giving us incessant experiences of hardness or softness, roughness or smoothness. These external excitants, then, furnish the **physical stimulus.**

The science of Physics has shown that **the so-called material world is a world of motion.** Reduced to its one fundamental characteristic, the physical world reveals itself through **vibration.** "If we imagine a machine so constructed as to be able to impress on a rod of metal vibrations of every degree of rapidity, we can set forth an imaginary gradation in the sensory responses. Thus, in a

darkened room, the rod begins oscillating and we feel its impacts on our skin as so many gentle *taps;* when the vibrations of the air thus excited become sufficiently numerous, we feel them as *pulses*, which we hear as *puffs*. When these puffs reach a rapidity of 16 in the second, they pass into the deepest bass *tone*. Here begin the specific responses of tone ; and they will run through the whole musical gamut as the vibrations increase in quantity, the tones becoming shriller and shriller (but *not* louder) until the vibrations amount to 36,000 in a second. Then all again is silence. The vibrations may increase and increase, but this increase brings with it no sound. It may be that here, or somewhere about this limit, the molecules of the air suddenly cease to move ; they have reached their limit of oscillation ; and any fresh impulse will move the air in a mass, but not move it in waves. Besides the air, however, there is ether, and this takes up the motion of the rod. At first, the ethereal pulses are not powerful enough to move the comparatively heavy molecules of a sensor nerve : for such an effect a greater rapidity is requisite, and when this reaches 18 millions in a second, the sensor nerves of the skin respond in what is known as a sensation of *warmth*. The leap from 36,000 vibrations of air to 18 million vibrations of ether, is the leap from sound to heat. The rod continues its acceleration, and when it reaches 462 billion vibrations in a second, then only is it *luminous*. The sensation of heat disappears, giving place to that of light,—that is, to red rays. The rays pass from red to yellow when the vibrations reach 540 billion, to green when they reach 582 billion, and to violet when they reach 733 billion in a second. Such at least are the verdicts of the calculus. *Then all is darkness."* [5] And yet we know, from chemical reactions, that still more rapid vibrations exist.

(3) Of the innumerable excitants about us only those which cause **actual excitation** of the organism produce either sensations or perceptions within us. Whenever, by any cause, a special set of nerves is paralyzed, the excitants that operate through the paralyzed set of nerves cannot affect the organism. Blindness is such a condition of the optic nerves. Thus a whole sphere of knowledge is shut out from the consciousness of the blind. There is

evidently necessary, then, in addition to the presence of external excitants, a **physiological stimulus.** This is furnished by the nervous system.

We are surrounded with an **invisible universe,** which can be mathematically proved to exist and into which we sometimes obtain glimpses through the telescope and the microscope, but which no instrument of precision can fathom. The fixed stars are so distant that the largest telescope does not affect their magnitude and no microscope has enabled us to see a thought. Sensation and perception are evidently conditioned upon the adjustment of our sense-organs to the objective world. Many of the lower animals show a far finer adjustment than man can boast. It is evident also that men vary in their delicacy of adjustment to the external world. The phenomena of **Clairvoyance,** so far as they can be proved real and not apochryphal stories, find their scientific explanation in the extraordinary delicacy of adjustment to external conditions. We can place no strictly scientific limit to the range of perception. It is, however, highly probable that all communications are to be explained in the same way and consist in the transmission of impressions through the nervous system. The hypothesis of modern **Spiritism,** usually accompanied with the motives and machinery of trickery and deception, which refers unusual power of perception to the revelation of spiritual agents, is wholly unscientific and unworthy of credence. Such phenomena as the **transference of thought at a distance, mind-reading** and kindred subjects are undergoing investigation by a Society for Psychical Research formed for the purpose of extending our knowledge of the extraordinary in psychical experiences. Whatever may be found true with regard to the exceptional, and often wholly imaginary, conditions of knowledge, it will not essentially affect what is more certainly determined.[6]

4. Abnormal Excitation.

The nervous organism, as a part of the corporeal system, is liable to disease. Mechanical rupture, chemical disorganization, poisonous constituents in the blood, or defective nourishment, may readily derange the transmit-

ting power of a nerve or set of nerves, and thus either destroy or vitiate all communications through them. Fever has a powerful disintegrating tendency and often fills the sufferer with abnormal excitations amounting to that complete confusion of sense-impressions called **delirium.** Visions, epileptic fits, and insanity are results of abnormal excitation of the nervous organism. It is a noteworthy fact, as affording some explanation of these phenomena, that, if a nerve be irritated in any unnatural way, it will still convey an impression of its own peculiar kind. Thus, an electric current in the optic nerve produces a flash of light and in the auditory nerve a sound. This is called the **idiopathy** of the nerves (from the Greek, ἴδιος, *idios,* own, and παθός, *pathos,* suffering). It is also expressed as the **specific energy of the nerves.**

The doctrine of the specific energy of nerves has been generally accepted since the time of the great German physiologist, **J. Müller** (1801–1858), and is still held by the German physicist, **H. L. F. Helmholtz** (1821–), to be of extraordinary importance to the theory of perception. It is, however, rejected by **Lewes,** who says: "The specific sensation, or movement, which results from stimulation of a nerve depends not on the nerve, but on the mechanism of which the nerve is one element."[1] **Hermann Lotze** (1817–1881), a distinguished German psychologist, denies the specific energies of the nerves, holding that specific energies would imply specific structures, of which we know nothing. He says: "We merely know that the stimulus of light, impact and pressure, the passage of a current of electricity through the eye, awaken the sensation of light; and perhaps that impact and electricity produce also the sensation of sound; and the latter also the sensation of taste. Now a motion of the ponderable parts by means of impact can scarcely take place in the tense eye-ball without a part of this motion being also converted into motions of the ether that exists in the eye, and so producing a motion of light, which acts as adequate stimulus upon the nerve of sight in precisely the same way as if it came from without. Just so

the imparted shocks may be changed into oscillations of the tense parts and membranes, which are then normal stimuli for the nerve of hearing just as well as are the acoustic waves that come from without. Finally, it is quite certain that the electrical current excites chemical decomposition of the fluids of the mouth, and that the adequate stimulus for the nerve of taste consists in this directly."[3]

5. Definition of a Sense and a Sense-organ.

A sense is a power of the soul to know a particular class of external impressions. A sense-organ is a part of the terminal apparatus of the nervous organism that furnishes the soul with some impression in an act of Sense-perception. The word "**sense**" is often used to signify general intelligence, as when we say, "That is a man of *sense.*"

It is important to remember that **a sense is a psychical power** while **a sense-organ is a physiological part.** It is not the eye that sees nor the ear that hears, nor is it the brain. It is the self-conscious *Ego. I* both see and hear, with the aid of my sense-organs as instruments. An eye-glass or an ear-trumpet is sometimes necessary to supplement the natural organ. The organic instruments no more do the seeing and hearing than do these artificial aids. They are simply essential helps in the process of Sense-perception.

6. Classification of the Senses.

The following classification of the senses is the most satisfactory:

(1) The **Muscular Sense** has for its organs nerves distributed to the muscles, which furnish such sensations as those of motion, resistance, weariness, excess of energy, etc. The sensations thus derived are of two classes: (*a*) Sensations of *free movement;* and (*b*) Sensations of *impeded movement.*

(2) The **Organic Sense** has for its organs nerves dis-

tributed to the various bodily organs, furnishing sensations, readily distinguished from the muscular sensations, indicative of the organic condition of health and giving notice of disease in the organs by sensations of pain or uneasiness.

(3) The **Special Senses** are five in number and are called "special" because each has a special organ furnishing the most important elements of Sense-perception. They are **Touch, Smell, Taste, Hearing,** and **Sight.** It is with these five special senses that we have mainly to deal in discussing Sense-perception.

Another classification of the senses, based upon the mode in which the sense-organs are stimulated, has been given, as follows:

Molar or Dynamical senses	Tactile—Touch. Acoustic—Hearing.
Molecular or Chemical senses	Dialytic—Taste. Catalytic—Smell.
Intermolecular or Etheric senses	Thermic—Temperature. Photic—Sight.

The sensations of touch and of temperature are, indeed, different, but they are received through the same general organs.

Regarding the **completeness of the human senses,** as related to external nature, no certainty can ever be attained; for, if there are agencies in nature other than those which now produce sensations within us, it is impossible to prove their existence, unless our organization were so changed as to enable us to perceive them. "It is, however, as unphilosophical to suggest a limit to the number of modes of action of the common force of nature as it is to assume the existence of such modes as we cannot possibly establish by proof; for we cannot deny the existence of other modes of action of the force of nature than those revealed by our present senses."

7. The Special Senses.

(1) **Touch.**—The tactual sense has its organ in the **skin** (see Figure 9). This is filled with minute **papillæ,**

placed beneath the cutis and enclosing the terminations of fine filaments of nerve (see Figures 9 and 10). Different parts of the skin vary in sensibility. The **sensory circles,** or areas limited by the ability to distinguish the two points of a pair of dividers, range from four one-hundredths of an inch to over two and a half inches in diameter. There are five classes of distinguishable sensations of touch: (*a*) those of **gentle touch,** as when a finger is laid softly on a smooth surface; (*b*) those of **acute pain,** as when a sharp point is touched; (*c*) those of **temperature,** as when the hand is placed on a hot surface; (*d*) those of **pressure,** as when a light weight is laid on the surface; and (*e*) those of **reaction,** as when we feel that a little more or a little less force must be used to hold or balance an object. The last two are combinations with muscular sensations. All tactile sensations are referred to the surface of the body and are assigned location in space.

The **extent of sensory circles** was first determined in 1835 by a German physiologist, **E. H. Weber,** who has been followed by other experimenters. The method is to take a pair of blunt-pointed dividers and apply the points to the skin of another person in different places, bringing the points together till there seems to be but *one* sensation. The distance of the points from each other is then recorded. The individual variation is very great. The following is a comparative table based on the most carefully compiled results:

Tongue-tip	1.1 mm.	(.04 inch)
Palm side of last phalanx of finger	2.2 mm.	(.08 inch)
Red part of lips	4.4 mm.	(.16 inch)
Tip of nose	6.6 mm.	(.24 inch)
Back of second phalanx of finger	11.0 mm.	(.44 inch)
Heel	22.0 mm.	(.88 inch)
Back of hand	30.8 mm.	(1.23 inches)
Forearm	39.6 mm.	(1.58 inches)
Sternum	44.0 mm.	(1.76 inches)
Back of neck	52.8 mm.	(2.11 inches)
Middle of back	66.0 mm.	(2.64 inches)

The **explanation of Weber's sensory circles** has given rise to much discussion. He himself held that each circle is supplied by *one* nerve-fibre. Other experiments have shown that pressure-spots are recognizable within a circle. **George T. Ladd** (1842–), an American psychologist, concludes, "The sensations produced by laying a single blunted divider's point upon the skin, are really very complex, and are composed of the sensations from several pressure-spots blended with other sensations from the rest of the same area not covered by the pressure-spots. The fineness of the discrimination possible in any area of the skin depends, then, upon how all the points irritated stand related to the specific pressure-spots." [9]

The Greek philosopher, **Democritus** (B. C. 460–357), taught that **touch is the primary and original sense,** out of which the other senses are developed. There is much to render this idea probable. The lowest forms of nervous organism respond only to the stimuli of direct contact. Some of these lower forms are thought to respond to differences of color, which are probably not known as such, but still are felt as different. Touch always remains the **test sense** to which we resort in cases of doubt. We recognize the case with which the ear and the eye are deceived, but feel confident of the real presence of an object when we can touch it and of its illusory character when we cannot.

(2) **Smell.**—The organ of the olfactory sense is the **nostrils,** which afford a surface covered by a sensitive mucous membrane for the reception of odorous particles (see Figure 11). Smell is believed to be excited only by contact with a gaseous substance. The sensations are localized in the nose and are referred to its interior surface. They are commonly named from the names of the objects that excite them.

[9] "The **amount of a substance** which we are enabled to recognize by the organ of smell is extraordinarily small. The merest trace, in a gaseous form, of a drop of oil of roses is all that is necessary to produce in our nostrils the impression of a pleasant odor. The smallest particle of musk is sufficient to impart its characteristic smell to the clothes for years, the strongest current of air being in-

sufficient to drive it away; and Valentin has calculated that we are able to perceive about the three one-millionth of a grain of musk. The delicacy of our sense of smell surpasses that of the other senses. The minute particles of a substance which we perceive by smell, would be quite imperceptible to our taste, and if they were in a solid form, we should never be able to feel them, nor to see them, even if illuminated by the strongest sunlight. No chemical reaction can detect such minute particles of substance as those which we perceive by our sense of smell, and even spectrum analysis, which can recognize fifteen millionths of a grain, is far surpassed in delicacy by our organ of smell.

"The **development of the sense of smell in animals** is even more astonishing than it is in man, and plays a very important part in their organization. Hounds will recognize by smell the trace of an animal perfectly imperceptible to sight. But the acuteness of their sense of smell is far surpassed by that of the animal pursued, which is able, when the wind is in a favorable direction, to scent the huntsman at a distance of several miles." [10]

(3) **Taste.**—The organs of taste are the **tongue, palate,** and a portion of the **pharynx** (see Figure 2). These organs contain minute terminal **taste buds** (see Figure 12), which are distributed with varying degrees of closeness to one another near their surfaces. The tongue and other parts serving as organs of taste are also organs of touch. Substances must be in liquid form, in order to be tasted. We generally name tastes, as we do smells, from the objects that furnish them. We localize sensations of taste in the mouth and so attribute to them extension in space.

"The **sensitiveness** of our gustatory organs for certain substances is very considerable, but not to be compared to that of smell. We can recognize by taste a solution of one part of sulphuric acid in 1,000 of water. A drop placed upon the tongue would contain about one two-thousandth of a gramme (three four-hundredths of a grain) of sulphuric acid, an infinitesimally small quantity, the detection of which by chemical analysis would be difficult." [11]

(4) **Hearing.**—The organ of the auditory sense is the **ear,** including the corrugated receptacle of the external ear and the vibrating tympanum, series of percussive bones and undulating liquid of the inner ear (see Figure 13). Sensations of sound are very numerous and are attended with perceptions of position and distance. These, however, are not immediately given with exactness, but are determined by experience and afford a large opportunity for error. Sensations of sound are the basis of music and of articulate speech, which last is a human characteristic.

Closely connected with the phenomena of sound are the **rods of Corti**, so called from the name of their discoverer (see Figure 14). They are situated in the coil of the cochlea (see Figure 13). They number about 3,000. The rods, or fibres, are not of uniform size or shape, and they remind one of the strings of a piano. The cochlea is thus provided with a "sympathetic vibratory apparatus for the perception of musical sensation," each fibre transmitting its peculiar tone. It is probably through this delicate organ of Corti that we are able to distinguish the fine shades of musical tone.

(5) **Sight.**—The organ of the visual sense is the **eye** (see Figure 15). The image of the object seen is thrown upon the **retina** (see Figure 15, *rr*), but vision does not take place there. There are *two* images, one in each eye, and they are *inverted,* which starts the question, How do we see *one* object and see it *upright?* Impressions are supposed to be conveyed through the intricate mechanism of the retina (see Figure, 16) and the optic nerve of each eye (see Figure 15, 16, and Figure 17, *n*), the optic nerves crossing in the commisure (see Figure 17, *oc*) and continuing to the brain, where perception takes place. The object of vision has the following characteristics:

(*a*) It is *extended;*

(*b*) It has only *superficial* extension;

(*c*) It is *colored* (*i. e.*, shaded), often *variegated.*

That the image should appear **extended** is not difficult to account for, because the impressions are probably delivered to the brain side by side, and so really extended, although in an area much smaller than the image on the retina. That the mode of extension is in two dimensions, or only **superficial,** instead of in three dimensions, or having depth as well as area, is regarded as certain from experiments made on those restored from blindness. The English physician, **Cheselden** (1688–1752), gave sight to a young patient of twenty years by an operation for cataract. The moment the patient saw, everything appeared to him upon a *plane surface.* His subsequent experiences, and those of other patients, show that the idea of depth, or of the third dimension in space, is derived by experience with the aid of movement and the sense of touch. **Binocular vision,** or vision with two eyes, is sometimes appealed to, to show that we know depth by sight alone, but the stereoscopic pictures, which give the same result as binocular vision of natural objects, are upon a perfectly plane surface.

There has been much speculation upon the **cause of color** in our optical experience. The following is the **Young-Helmholtz theory,** so called because invented by **Thomas Young** (1773–1829), an English physicist, and developed by the German physicist, **Helmholtz.** It may be stated as follows: "Let us suppose, for example, a nerve-fibre to terminate in a cone (see Figure 16, rod and cone layer, 9) which, through its physical or chemical constitution, is only affected by red rays of light; then this nerve-fibre will transmit the irritation to the brain, and the brain thus receives an intimation that the impression has been made by a certain kind of light, which is recognized as red. Let us also suppose the same cone to be connected with another nerve-fibre, the end of which can be irritated only by a green ray, then the brain, if the irritation of this nerve-fibre has been conveyed to it, becomes conscious of the presence of a different kind of light, which, from experience, it will call green. We can thus picture to ourselves the existence of several kinds of nerve-fibres in the optic nerve, which differ from each other only in their terminal organs within the rods and cones, each of which can be

irritated by a particular kind of light alone. At first it would be supposed that a vast number of fibres must exist in a sensitive element of the retina.

"It would be a great temptation to claim for every color in the spectrum a separate nerve-fibre ; but it is quite sufficient if we reduce the number of fibres to *three*, in accordance with the number of primary colors, *red*, *green*, and *violet*. In fact, all the phenomena of the sensation of color may be perfectly explained on the supposition that, in each point of the retina, three kinds of nerve-fibres terminate, one of which is sensitive to *red*, another to *green*, and the third to *violet*." [12]

Now suppose that the fibres sensitive to red are without the peculiar quality that renders them sensitive. Then the person in whose eye there is this deficiency will be blind to this color and we have a case of **color-blindness**, lately proved to be very common, almost one in twenty persons showing an incapacity to distinguish red colors distinctly. What looks to others white, must to them have a greenish-blue appearance. There are degrees of color-blindness, an incapacity for *shades* of the color. This peculiarity is called also **Daltonism** from the name of the English chemist, **John Dalton** (1766–1844), who discovered the existence of color-blindness by finding in himself an incapacity to distinguish the red coats of soldiers on parade from the green color of the grass.

8. The Knowledge Obtained by the Special Senses.

Having reviewed the various special senses and considered the organs through which knowledge is furnished, we now need to inquire what knowledge is furnished by them. Let us, then, apply our sense-organs to some simple object, an orange, for example.

(1) By **Touch** we know the orange to possess (*a*) *resistance* in a degree which we name *hardness* or *softness;* (*b*) *surface,* which we characterize as *rough* or *smooth;* and (*c*) *extension,* which by movement we learn to be in *three dimensions,* and describe as spherical.

(2) By **Smell** we obtain a pleasant and pungent *odor,*

and from this sense we can derive no other knowledge except the distribution of this odor in space, it being more or less intense as we bring the orange near or remove it from us.

(3) By **Taste** we derive two forms of knowledge: (*a*) the *flavor* of the orange, which is the appropriate presentation of Taste; and (*b*) *touch*, which is not special to this sense and has been considered above.

(4) By **Hearing** we can obtain various *sounds*, as the orange is variously struck or allowed to fall from different heights, and we can, in part, locate the orange by the sounds.

(5) Finally, by **Sight** we perceive *colored extension*, but the presentation does not agree with that of Touch; for the orange does not present a sphere, but a circle, to the eye. We correct this by taking a new point of view and the disagreement is then resolved into agreement. We distinguish also by Sight *contrasts* of color, as light and shade. *Size* is perceived, but it is merely relative, and to know it positively we must also know the distance of the object from the observer.

When we consider that all sense-impressions are simply movements of matter in space, and that the nervous organism is itself simply an aggregate of material molecules, and then contrast with these the knowledge acquired through Sense-perception, it is evident that **there is between sense-impression and sense-knowledge a great interval.** This has been generally recognized by the greatest thinkers. The English physicist, **John Tyndall** (1820–), says: "The passage from the physics of the brain to the corresponding facts of consciousness is *unthinkable.*"[13] The English anatomist and biologist, **Thomas Henry Huxley** (1825–), observes: "How it is that anything so remarkable as a state of consciousness comes about by the result of irritating nervous tissue, is just as *unaccountable* as the appearance of the Djin when Aladdin rubbed his lamp."[14] The

German physiologist, **Du-Bois Reymond** (1818–), says: "If we possessed an absolutely perfect knowledge of the body, including the brain and all changes in it, the psychical state known as sensation would be as *incomprehensible* as now. For the very highest knowledge we could get would reveal to us only matter in motion, and the connection between any motions of any atoms in my brain, and such unique, undeniable facts as that I feel pain, smell a rose, or see red, is thoroughly *incomprehensible*." [15]

9. What do we Perceive?

Sense-perception affords us (1) **separate and different sensations,** (2) **conditioned upon physiological stimuli within the organism and physical stimuli outside of the organism.** The sensations themselves are not the object of perception, but something beyond them is. Sensations are psychical facts, subjective, evanescent, and successive. Objects perceived are physical realities, objective, permanent, and co-existent in space. If the sensor nerves of any special sense are cut, we can perceive *nothing* beyond the point of section. If these nerves are excited at any point between their termini in the sense-organ and their termini in the brain, we *do* perceive something. This proves that **perception occurs in the brain. What do we perceive in the brain?** A series of **changes in the nervous organism,** which we refer to permanent causes outside of the organism. In order that Sense-perception shall occur, two conditions must be fulfilled: (1) **something in the brain must react on the sense-impressions;** and (2) **something in the brain must refer these impressions to external space,** or project them outward and unify them. With regard to the certainty of our knowledge of what we perceive, it must be said that **we have an immediate knowledge of the non-Ego** as shown in the Primary Affirma-

tion of Co-existence. The doctrine here maintained is known as **Dualistic Realism.**

Many philosophers have distinguished between what they call **the Primary and the Secondary Qualities of Matter,** or of bodies. This is a mental distinction based on what is universal and what is only occasional in our experience of bodies. The primary qualities are those which are universal, as resistance and extension. The secondary qualities are those affecting the particular senses in varying ways, as smell, taste, sound, and color. The distinctions are very elaborately treated by Hamilton, from an historical point of view, in his "Lectures on Metaphysics," pp. 342, 347.

10. What is It that Perceives?

We have seen that, in order that Sense-perception shall occur, two conditions must be fulfilled: (1) Something in the brain must react on the sense-impressions; and (2) something in the brain must refer these impressions to external space and unify them. Consciousness discloses to us what it is that does this. **It is the conscious self.** *I* feel sensations and distinguish between the successive changes in the nervous organism. *I* react on the brain, and when I do not thus consciously react, as in sleep or swoon or during a moment of absorption in other things, there is *no* sensation and there is *no* perception of the impressions not reacted upon. *I* also project impressions in space, or assign them locality. I consciously *judge* of the distance of a horse in a field or of the direction of a voice calling. Sense-knowledge, then, is not a product of organic action, but of physical and physiological stimulation *accompanied with psychical reaction.* This reaction is, to consciousness, **interpretation,** and, accordingly, we continue our discussion of Sense-perception in the next Section on "Sense-interpretation."

For illustration of this topic, let us recur to our experiment with the orange. Each of the five senses furnished us with distinct classes of impressions, which we were obliged to refer to causes acting outside of ourselves and located in or upon the body with which we were experimenting, the orange. Without the reaction of our Sensibility upon the orange, we should have felt nothing. Without the reaction of our Intellect upon the orange, we should have known nothing. The sensations we derived from it had to be interpreted and unified, before we had any idea of an object possessing such qualities as we discovered in the orange. This interpretation and unification were not mere movements of matter or mere organic processes, but conscious steps of knowing initiated, conducted, and completed by ourselves for a purpose.

In this section, on "Sense-perception," we have considered:—

1. ***Sense-perception Defined.***
2. ***The Two Elements of Sense-perception.***
3. ***The Conditions of Sense-perception.***
4. ***Abnormal Excitation.***
5. ***Definition of a Sense and a Sense-organ.***
6. ***Classification of the Senses.***
7. ***The Special Senses.***
8. ***The Knowledge Obtained by the Special Senses.***
9. ***What Do We Perceive?***
10. ***What is It that Perceives?***

References: (1) Hamilton's *Lectures on Metaphysics*, p. 336. (2) Lewes' *Problems of Life and Mind*, Second Series, p. 556. (3) *Mind*, April, 1882, p. 300. (4) *Id.*, p. 301. (5) Lewes' *Problems of Life and Mind*, Third Series, pp. 254, 255. (6) See *Reports of the Proceedings of the Society for Psychical Research*, published by Trübner & Co., Ludgate Hill, London. (7) Lewes' *Problems of Life and Mind*, Second Series, p. 210. (8) Lotze's *Outlines of Psychology* (translated by George T. Ladd), pp. 22, 23. (9) Ladd's *Physiological Psychology*, p. 410. (10) Bernstein's *Five Senses of Man*, pp. 289, 290. (11) *Id.*, p. 301. (12) *Id.*, pp. 111, 112. (13) Tyndall's *Fragments of Science*, p. 121. (14) Huxley's *Lay Sermons*. (15) Du-Bois Reymond's Lecture on *The Limits of the Knowledge of Nature*.

SECTION III.

SENSE-INTERPRETATION.

1. The Double Character of Sense-perception.

We have seen that the simplest act of Sense-perception involves the co-operation of the sensory mechanism and the knowing self; *i. e.*, without the sensory mechanism, there would be nothing perceptible; and without the knowing self, nothing would be perceived. Much of our knowledge derived through Sense-perception is the result of interpretation. The importance of Sense-interpretation can be better realized after we have considered the development of the senses, the acquired perceptions, the localization of sensations, illusions and the organization of sense-knowledge, to which we now proceed.

2. The Development of the Senses.

The lower animals are born with an almost complete adaptation for the performance of their life functions. The colt stands and walks when only a few hours old. At the age of three, he can do almost all he can ever do in his life-time. It is not so with a human infant. For years it is absolutely dependent on others for the continuance of its existence. No living creature is more ignorant, more defenseless, more entirely at the mercy of beings other than itself. Destined for the highest attainments of intelligence, the infant possesses the least of automatic adaptation to the conditions of life. Everything has to be learned from the beginning. Instinct is at the mini-

mum, Intellect, undeveloped but potential, is at the maximum. Almost everything done by the child is done by conscious psychical reaction, not mechanically. Let us notice more particularly (1) the *order* and (2) the *mode* of development.

(1) The **Order** of Development.—The sense of **touch** is the earliest developed. The organization of tactual sensations into an intelligible system comes later. **Hearing** comes into play very early, so that a child may be frightened by loud or sudden noises. At first **tastes** and **smells** are not distinguished. Perceptive **vision** does not occur till the eye has formed the field of view.

In 1863, a German observer, **Thierri Tiedemann,** made careful observations on one of his children, from its birth, for scientific purposes. This child rejected medicines on account of the taste at the age of thirteen days and at the same time knew its nourishment by smell. The child, which was not considered precocious, knew the direction of sounds at four months and ten days. At seven months, he imitated words without knowing their meaning. At sixteen months, he pronounced some words accurately and knew their significance. The child was able to fix his eyes attentively at two weeks from his birth, showing some power of distinguishing objects. In the second month he smiled at certain actions and toward the close of the month would regard one thing with prolonged attention. By the middle of the sixteenth month, he could distinguish some objects in engravings.[1]

(2) The **Mode** of Development.—We confine ourselves to vision and touch. Sensations of light in the eye are experienced at an early age. Vision proper begins, however, only when the eye is attentively fixed upon particular points, which are attractive by their brightness. Then lines and colors are discriminated and objects begin to take shape in the field of view. These are all seen at first

on a perfectly flat surface and the idea of perspective is of later growth. This is proved by experiments with the blind when they are restored to sight and with young children. The disposition of objects in their true relations in space is acquired by the consentient movement of the hand with the eye, whereby the presentations of sight are correlated with those of touch, and so the idea of perspective is established. There are three processes in learning space-relations by touch. They are as follows: (*a*) *One's body is known as bounded by a limiting surface,* as when one is surrounded by cold or heated air or water; (*b*) *the body and what is not body are known as different,* as when the hand is first applied to the body and then to something else, the first contact giving the sensations of touching and being touched and the second of touching only; and (*c*) *by grasping objects they are known as occupying space,* as when one grasps his wrist, finding a group of sensations *within* sensations, and then grasps a piece of wood, finding something *not* sensitive occupying the space where the group of sensations was.

The following anecdote is related of a boy of twelve, one of Cheselden's patients, from whom he had removed a cataract. He knew very well the dog and the cat by *feeling*, but could not tell which was cat and which was dog, when he *saw* them. One day, when thus confused, he took the cat in his arms, and feeling her carefully so as to connect his sensations of touch with those of sight, he set her down saying, "So puss, I shall know you another time."[2] **William James** (1842–), an American psychologist, thinks sight can be developed without the aid of touch, and instances an Esthonian girl, Eva Lauk, 14 years old, born without arms or legs, who "came as quickly to a right judgment of the size and distance of visible objects as her brothers and sisters, although she had no use of hands."[3]

3. Two Classes of Sense-perceptions.

If I see and feel a piece of red-hot iron, I know by the sense of sight that it is red and by the sense of touch that it is hot. Each of these perceptions may be called *original.* After this experience, I know from the sight of the iron that it is hot, and when I see iron heated to redness, I say, "It looks hot." This is an *acquired* perception, because the idea of heat is not an original deliverance of the sense of sight, but is derived from the psychical combination of the perception of sight with that of touch.

An **original perception** is one that is obtained from a single sense when exercised alone; and an **acquired perception** is one that is obtained by using the knowledge given by one sense as a sign of knowledge which might be gained by another.

The **economy of time and effort** in the use of sense-signs is very great. Thus, a barrel is known by the sound to be empty, an engineer knows the weakness of a bridge by the color of the timbers, a physician knows the condition of the heart and lungs by the sound in the stethoscope. Such signs are often obtainable where more direct information is impossible, and furnish as trustworthy grounds of inference as the facts of original perception.

4. Acquired Sense-perceptions.

(1) Of **Touch.**—These are of the highest value. They enable the infant to distinguish injurious from harmless objects. To the skilled artisan, they are a kind of mechanical conscience, intimating to him a thousand facts of utmost importance. The quality of his materials, the sharpness of his tools and the amount of power to be applied to them, are more or less clearly indicated by these perceptions.

(2) Of **Smell.**—We identify objects by the odor they emit. Thus a rose or a lily is distinguished by the smell and we affirm its presence with confidence. The ability to do this depends upon our frequent association of the peculiar odor with a certain assemblage of qualities which we call a "rose." We are deceived when the quality which we have always known only in certain connections is presented to us isolated from its usual accompaniments.

(3) Of **Taste.**—What is true of Smell is true also of Taste. The professional wine-taster is able to tell the kind and age of wine by the taste alone and sometimes attains such delicacy of discrimination as to analyze by the taste the proportions of different kinds in a combination.

(4) Of **Hearing.**—These are exceedingly useful. By them we are enabled to infer with considerable accuracy the direction and distance of objects. Every voice has its own peculiar quality and we can frequently recognize persons by their voices. The waiting wife knows the sound of her husband's footstep and the expectant host identifies the rap of his friend on the door.

(5) Of **Sight.**—The best results of vision are acquired. The original perceptions by Sight are simply extended colored surfaces. Everything else is acquired. (*a*) We judge of *distance by size.* Given the magnitude, we can determine the distance. If we are deceived in the magnitude, we fall into error concerning distance, as when we take a small boy for a man and judge him to be farther off than he is. (*b*) We judge of *magnitude by distance.* A small insect is sometimes taken for a bird, when it is erroneously supposed to be at a great distance from the observer. (*c*) We judge of *distance by intensity of color*

and clearness of outline. In looking at a forest we notice that the nearer trees are brighter and more sharply defined than those more remote. These differences constitute what painters call "atmosphere," by which they adjust objects in the proper space-relations. (*d*) We judge of the *size of objects by comparing them with other objects.* Men standing by an unusually tall object, as a high monument, seem like children. (*e*) We judge of *distance according as there are more or fewer intervening objects.* The sea without vessels seems small, but it seems larger when covered with sails. The moon appears large when near the horizon, because many terrestrial objects intervene; smaller in the zenith, because there is nothing with which to compare it.

In all these processes of acquired Sense-perception, the necessity of a psychical reaction is evident.

5. The Localization of Sensations.

That we localize our sensations in different parts of the body, is universally admitted. There are, however, two theories concerning the manner in which this localization is accomplished. These are: (1) The Intuitional, and (2) the Empirical theories.

(1) The **Intuitional, or Nativistic, Theory** assumes that space is intuitively known at the very beginning of our perceptive life. This theory has been held by the Scotch philosophers generally and by the followers of the great German physiologist, **Müller,** who maintained that the spatial order of sensations has its basis in the constitution of the organism and is directly known by the soul.

(2) The **Empirical, or Genetic, Theory** maintains a

psychological evolution of the idea of space in the progress of sensational experience. The first hints of this doctrine are found in **Locke** and **Berkeley,** and it has been more recently elaborated in England by **Mill** and **Spencer.** The most complete statement of the theory is to be found in the works of the German psychologist **Lotze,** who, however, does not deny an innate psychical power to form an idea of space, and in those of the German physiological psychologist, **W. Wundt** (1832–), who supplements **Lotze's Theory of Local Signs** with a factor of muscular movement.

Lotze's Theory of Local Signs applies to the localization of all sensations, but we confine our statements to the application of it to the sensations of vision. "The local sign, that concomitant of the sensation of color which prevents its losing its individuality, consists in a system of movements. To understand it, let us suppose that the image of a brilliant point is formed on one side of the retina; at the same time a movement of the eye takes place, by which the centre of clearest vision is placed beneath this image (see Figure 15 for the distribution of the retina and Figure 17 for the motor attachments of the eye). We know, in fact, that there exists in the retina a small portion at the centre (*fovea centralis*, see *v* in Figure 15), which has a visual sensibility very superior to any other part. We know also, that, in virtue of a physiological contrivance, whose causes and origin it is not here our business to investigate, the excitation of any point of the retina occasions a deviation of the axis of the eye, in such a manner that the point of clearest vision is directed toward the exciting object. This understood, let us call this point of clearest vision *v*, and suppose that three other points of the retina, *a*, *b*, and *c* are excited (see Figure 15). The image formed at *a* will give rise to a certain movement, necessary to produce the image at *v*. The image formed at *b* will give rise to a movement different from *av*. The image formed at *c* will give rise to a movement different from *av* and *vb*. Whatever positions we assign to *a*, *b*, *c*, it is easy to see that, in any case, the movements will not be identical, that each will have a character peculiar to

itself. Indeed, if we suppose that *a*, *b*, and *c* are situated in the same line, or rather, in the same circular arc, the segments *va*, *vb*, *vc*, of this arc must have different magnitudes, and, as the eye must pass over them to bring in turn the images *a*, *b*, *c*, in the direction of clearest vision, there will necessarily arise muscular movements that are different in magnitude, though analogous in other respects. If we suppose *a*, *b*, *c* to be situated on the circumference of the same circle whose centre is *v*, then *vb*, *va*, *vc*, will be equal, but in different directions. Finally, if we suppose that *a*, *b*, and *c* are situated neither on the same line from *v*, nor on the same circumference whose centre is *v*, then *va*, *vb*, *vc*, will be at the same time unequal in magnitude and in different directions. If we designate the sum of all these movements by *S*, this sum is for each point of the retina an unchangeable and definite combination, and so we believe that we have in it a local sign that differences the excitation at each point from the excitation at any other."[4] The arrangement of sensations in a spatial order is supposed to result from a discrimination of local signs. Lotze held this theory simply as an hypothesis. **"The most recent of the genetic theories is that of Wundt.** He accepts the theory of local signs, but judges it insufficient; for how can a graduated series of qualitative local signs be transformed into an order of space? Lotze explains this only by admitting the presence of *a priori* laws of mind. But, says Wundt, the different impressions are accompanied by movement, and thence results a feeling of innervation. These two elements—local signs and movement, with accompanying sensations—explain localization in space."[5] As Lotze really derives the idea of space from the laws of mind, so Wundt implicates it in his element of movement,—already really included by Lotze,—which is impossible without space. While these genetic hypotheses may serve to show how a knowledge of actual positions is acquired by the soul, they do not remove our belief in the soul's original power of space-intuition. **Extension, or space-occupancy, seems to be a datum in every actual experience of Sense-perception.**

6. The Illusions of Sense-perception.

It is natural for one to believe in the presentations of his senses. On this very account one is liable to be de-

ceived by them. A knowledge of the fact and of the sources of sense-illusion diminishes the probability that an observer will be deceived. The sources of sense-illusion are three: (1) The **environment,** which may present false appearances; (2) the **organism,** which may be abnormally excited or internally deranged; and (3) **expectation,** which may lead to beliefs not justified by facts.

(1) **Illusions produced by the environment** originate in some presentation to the sense-organs that would not be a source of illusion, if properly interpreted. Thus, a stick half immersed in water seems bent. This is because the light reflected from the stick is refracted unequally by the water and by the air. To one ignorant of the fact of refraction, the illusion is complete; but, as soon as this fact is taken into account, the illusion is dispelled. Certain figures are illusory, because their parts are capable of a double interpretation, according as they are mentally combined (see Figure 18). Art is prolific in illusions, presenting certain signs which indicate realities. The whole effect of perspective in painting is illusory, for while it represents depth it is on a plane surface. **Ghost-seeing** is often nothing more than the interpretation of some ghostly sign, for example a white garment, as indicating the presence of a spiritual visitor.

We have a strong tendency to interpret the indistinct or indefinite. Sully says: "This is illustrated in the well-known pastime of discovering familiar forms, such as those of human heads and animals, in distant rocks and clouds, and of seeing pictures in the fire, and so on. The indistinct and indefinite shapes of the masses of rock, cloud, or glowing coal, offer an excellent field for the creative fancy, and a person of lively imagination will discover endless forms in what, to an unimaginative eye, is a formless waste. J. Müller relates that, when a child, he used to spend hours in dis-

covering the outlines of forms in the partly blackened and cracked stucco of the house that stood opposite his own." [6]

(2) **Illusions produced by the organism** are owing to unusual excitations. The presentation of each nerve comes, in the course of time, to be referred to a particular part of the body. Thus, the sensation produced by a nerve running from the middle-point of the fore-finger of the right hand is referred to that point. Whenever that particular nerve is excited, no matter where or how, a sensation is produced which is referred to that point. If the finger is cut off and afterward the nerve is excited at the stump, the patient will affirm that he feels something touching the point of that finger. If any nerve is excited by any cause, as, for example, by mechanical stricture, chemical action or inflammation, the person believes himself affected as he ordinarily is when that nerve is excited. Fever, indigestion, or even undue excitement of a general character, may fill the mind with illusions. A permanent derangement of this kind is **insanity,** a temporary one is **delirium.** These may be of various degrees. Another source of organic illusion is **"after-sensation."** It is noticeable that sensations sometimes persist after their cause has been withdrawn. Thus, sounds continue to ring in the ears after the sound itself has ceased, and colors remain in the eye after the eye itself has been closed. These colors often give place to their complementary colors in an interesting manner.

The following **remarkable example of organic illusion** is related by a high medical authority, **Edward Hammond Clarke** (1820–1877), a Boston physician: "My earliest recollections (says a patient of Dr. Clarke's) are of a life made miserable by the daily companionship of a crowd of dreadful beings, visible, I know only to myself. Like

Madame de Staël, I did not believe in ghosts, but feared them mortally. . . . Several years ago, one of my sisters was taken ill with typhoid fever. I was not strong enough to be of any assistance in her chamber, so I undertook to finish some work which she had commenced, and became daily more and more worn out in my endeavors to carry it on. Anxiety, added to fatigue, finally brought back the old visions, which had not troubled me continuously for some years. Animals of all kinds, men, women, glaring-eyed giants, passed before or around me, until I felt as though I were surrounded by a circle of magic lanterns, and would sometimes place the back of my chair against a wall, that at least my ghosts should not keep constantly turning as they passed behind me. One evening, feeling too tired to sit up for the latest report of my sister, which my mother brought me regularly, I went to bed, leaving my door wide open, so that the gas from the adjoining entry sent a stream of light across one half of my little chamber, leaving the rest somewhat in shadow. Soon I saw my mother walk slowly into the room, and stop at the foot of the bed. I remember feeling surprised that I had not heard her footsteps, as she came through the passage. 'Well?' I said, inquiringly. No answer, but she took, slowly, two or three steps towards the side of the bed, and stopped again. 'What is the matter?' I exclaimed. Still no reply; but again she moved slowly towards me. Thoroughly frightened by this ominous silence, I sprang up in bed, saying, 'Why don't you speak to me?' Until then her back had been turned to the door, but as I spoke last she turned, almost touching my arm, and the light falling on her face showed me an entire stranger. She had heavy dark hair, and her face, quite young, was pale, and though calm, very sad. Over her shoulders was a child's woolen shawl, of a small plaid not unfamiliar to me, which she drew closely about her as if she were cold. Her right hand, which pressed the shawl against her side, was very white, and I was struck by the great beauty of its shape. The thought passed through my mind, 'Can she be a friend of the nurse? But why has she been sent so mysteriously to me?' As I stared at her in speechless amazement, she fell to the floor. I instantly stooped over the side of the bed. To my consternation there was nothing to be seen! Accustomed as I was to ghosts, if there had been anything in the least shadowy about my visitor, I should have suspected her tangibility; but so well defined was she, so vividly was her reality

impressed upon me, that I could not believe that she had vanished." In commenting on this case, which is but one of many equally remarkable, Dr. Clarke says: "This is evidence, to a certain extent, that the cerebral processes by which vision is produced may not only be started in the brain itself, but that, when so started, they are identical with those set going by an objective stimulus in the ordinary way." [7]

(3) **Illusions produced by expectation** are very common. Expectation is a condition of mind in which the subject is waiting for the appearance of something whose image is already more or less distinctly in his consciousness. This state is, substantially, one of **pre-perception.** As soon as anything appears presenting any of the qualities of that which is expected, the whole of what is expected is believed to be at hand. Thus, when a guest is expected, the sound of approaching footsteps is the occasion for announcing his arrival, before he is really seen. Some suggestion of a ghostly apparition is easily derived from the wind or the moon or other natural cause, by one who expects to see a ghost, and the picture is completed in the terrified consciousness. A coward is half beaten before he is touched, for his mind is filled with images of his own defeat which make him expect an overthrow. On the other hand, the expectation of victory is a potent means of securing it, unless it induces carelessness and underestimation of an adversary's powers.

The following is an **example of this kind of illusion:** "A lady was walking one day from Penryn to Falmouth, and her mind being at that time, or recently, occupied by the subject of drinking-fountains, she thought she saw in the road a newly-erected fountain, and even distinguished an inscription upon it, namely,—

If any man thirst, let him come unto me and drink.

Some time afterwards, she mentioned the fact with pleasure to the

daughters of a gentleman who was supposed to have erected it. They expressed their surprise at her statement and assured her that she must be quite mistaken. Perplexed with the contradiction between the testimony of her senses and of those who would have been aware of the fact had it been true, and believing that she could not have been deceived, she repaired to the spot and found, to her astonishment, that no drinking-fountain was in existence—only a few scattered stones, which had formed the foundation upon which the suggestion of an expectant imagination had built the superstructure." [8] Another case, taken from Sir Walter Scott's "Demonology and Witchcraft," records the experience of the author who, soon after the death of Lord Byron, had been reading an account of his habits and opinions. "Passing from his sitting-room into the entrance-hall, fitted up with the skins of wild beasts, armor, etc., he saw, right before him, and in a standing posture, the exact representation of his departed friend, whose face had been so strongly brought to his imagination. He stopped for a single moment so as to notice the wonderful accuracy with which fancy had impressed upon the bodily eye the peculiarities of dress and posture of the illustrious poet. Sensible, however, of the delusion, he felt no sentiment save that of wonder at the extraordinary accuracy of the resemblance, and stepped onwards towards the figure, which resolved itself, as he approached, into the various materials of which it was composed. These were merely a screen occupied by great-coats, shawls, plaids and such other articles as are usually found in a country entrance-hall." [9]

7. Methods of Avoiding Illusion.

The causes of sense-illusion readily suggest the means to be taken to avoid self-deception. The following rules seem to cover the different cases:

(1) **Observe closely,** to avoid being deceived by appearances.

(2) **Compare the presentations of the different senses.**

(3) **Take account of the organic condition.**

(4) **Do not entertain expectations** with such tenacity as to prejudge the actual presentation.

It is difficult to **avoid mingling inference with observed facts.** We have a strong tendency to create a theory of the cause of an appearance at the same time that we observe it. Lawyers find great practical difficulty in extracting the pure truth from even conscientious witnesses, because they are disposed to relate as seen that which they have only inferred as true. Even **scientific observers** and experimenters are not free from this vice of pre-perception and, accordingly, nothing can be accepted as certainly true in the sphere of sense-phenomena unless it can be verified repeatedly and by observers of a skeptical tendency. It is damaging to the theories of those who believe in the earthly return of departed spirits, that they produce their alleged facts only in the dark, under conditions of mental excitement and object to the presence of skeptical persons.

8. Percepts and Objects.

The presentations of Sense-perception are simple and single. They are isolated fragments of knowledge, not knowledge in an ordered system. No single sense gives us our entire knowledge of any one object. It is by the union of these fragments of knowledge into composite wholes that we come to know external objects as individual things, combining in themselves their various qualities. Each original deliverance of the senses is called a "**percept.**" An object of knowledge, as known by us, is a group of such percepts. External things are connected in our minds and are believed to be connected in reality, so as to form a *universe,* or system possessing unity; a *cosmos,* or inter-related whole, revealing harmony of action and subject to general laws. This unification takes place in consciousness under laws of mind intuitively known.

9. The Organization of Percepts.

In its reaction upon sense-impressions, the soul organizes the elements of knowledge into a *microcosm*, or little universe, corresponding to the outer cosmos. It does this by grouping the percepts that are received through the senses according to certain relations, which are as follows:

(1) The relation of **Being.** Percepts are accepted as the correlates, or representatives, of real beings. They stand for realities. They are distinguished from self and referred to a division of being that is not self.

(2) The relation of **Cause.** Percepts are apprehended as having been produced in us by the reality which they represent. We cannot think of them except as effects of something that has caused them.

(3) The relation of **Space.** Percepts are referred to certain points in space and stand related to one another in an order of co-existence. The forms of being which they represent are apprehended as sustaining these relations of co-existence at times when we are receiving no percepts from them.

(4) The relation of **Time.** Percepts are arranged in an order of succession. We distinguish between the earlier and the later. Each one is a unit and these units in their sequence give us the notion of number.

Unless percepts are thus organized in these relations, they are not entertained as elements of knowledge. They are organized parts of knowledge as soon as they fall into these relations. A percept of nothing, without cause, experienced nowhere, and at no time, is no form of knowledge. Here, again, we see that **our knowledge of a**

"thing," or natural object, is not simply a physical or a physiological result, but the product of psychical reaction.

10. Conditions of Organizing Percepts.

There are conditions that must be fulfilled, or it is impossible to organize impressions into knowledge. These conditions are :

(1) A sufficient **period of time.** No impression is perceived, unless the excitation has some continuance. A burning coal may be moved so rapidly as to appear like a circle of fire, when in reality it is but a single point. The reason is that the circle is made so swiftly as to produce but *one* impression through the eye.

The **velocity** of **light** and that of **sound** have been calculated by physicists and are set down as about 190,000 miles per second for light, and 1,090 feet per second for sound, at 32° F., sound travelling one foot faster per second for every degree above that temperature. The speed of **transmission through a motor nerve in man** has been calculated by **Helmholtz** to be about 111 feet per second, but **Von Wittich** found it to be 98.5 feet. **Hirsch** calculated the speed in the **sensor nerves** to be about 111.5 feet per second. "More than this has been done; the time has been measured which is requisite for an irritant conducted to the brain to be transmuted into consciousness. Such determinations, in addition to their theoretical value, are of practical interest to observing astronomers. In observing the passage of stars on the meridian and comparing the passage seen through the telescope with the audible beats of a second-pendulum, the observer always admits a slight error, dependent on the time which the impressions on the two senses require to reach the state of consciousness. In two different observers this error is not of exactly the same value; and in order to render the observations of different astronomers comparable with each other, it is necessary to know the difference between the two cases, the so-called **personal equation.** In order to refer the observations made by each individual to the correct time, it is necessary to determine the

error which is made by each individual. Let us suppose that an observer sitting in complete darkness suddenly sees a spark, and thereupon gives a signal. By a suitable apparatus, both the time at which the spark really appeared and that at which the signal was given are recorded. The difference between the two can be measured, and it is called the **physiological time** for the sense of sight: the physiological time for the sense of hearing and for that of touch may be determined in the same way. Professor Hirsch, of Neufchatel, found this to be, in the case of

The sense of **Sight**.....0.1974 to 0.2083 seconds.
The sense of **Hearing**.....0.1949 seconds.
The sense of **Touch**.....0.1733 seconds.

When the impression which was to be recorded was not unexpected, but was known beforehand, the physiological time proved to be much shorter; in the case of sight, it was only 0.07 to 0.11 of a second."[10] For a very complete and satisfactory summary of experiments of this kind, see Ladd's "Physiological Psychology," pp. 468, 497.

(2) A certain **intensity in the impression** is necessary. **J. F. Herbart** introduced into Psychology the expression the **"threshold of consciousness,"** to designate that point at which an impression or "representation" enters into the sphere of feeling. There has been developed a school of **psycho-physics** whose members have devoted much effort to the determination of the quantitative laws of sense-impressions. The **law of Weber** is: *In order that a sensation may increase in quantity in arithmetical progression, the stimulus must increase in geometrical progression.* Although this law cannot be rigidly demonstrated, it expresses a general truth, that an impression must reach a certain degree of intensity before it can be known, and that any increase in perception requires a greater proportionate increase in stimulation.

The most important contributor to psycho-physics is the German experimenter, **G. T. Fechner** (1801–1888). **Fechner's formula** is:

"*The sensation grows as the logarithm of the excitation.*" Nearly all the experiments of Fechner are contested by **Hering** and others. His work is in part accepted and modified by the French psychologist **Delboeuf** and the German psychologist **Wundt.** For a very interesting account of psycho-physical investigation and controversy, see Ribot's "German Psychology of To-day," translated by Baldwin. We have room for only a few **alleged results.** To increase perceptibly a sensation of *pressure*, we must add $\frac{1}{3}$ to the original weight; to increase a sensation of *muscular effort*, we must add $\frac{1}{17}$; to increase a sensation of *light*, we must add $\frac{1}{100}$; to increase a sensation of *sound*, we must add $\frac{1}{3}$.

(3) A certain **psychical reaction** is necessary. Sometimes a soldier, wounded in the heat of battle, is not conscious of his injury until the battle is over. In this case, thousands of painful impressions would have been realized had they been made the objects of conscious reaction. The attention being engrossed upon other objects, they pass away and are not grouped with his perceptions, because they have not received **attention.** Others designate this act of attention by the word **apperception,** meaning thereby the reaction of the conscious subject upon the impressions.

Wundt makes much of this **process of apperception** and locates it in the frontal regions of the brain. It is through it that unity is given to our mental life. What is it that attends or apperceives? Consciousness says "*I*," indicating thereby the conscious self. Does physiology contradict this testimony? Does it affirm that apperception is a function of the brain, or of a portion of the brain? There is no physiological, or other evidence in opposition to that of consciousness. "All the sensations of the senses," says **Bernstein,** "of which we are capable, pass into perceptions of the senses, *as soon as certain mental operations* have been aroused by the sensory excitement." [11] "We are entirely unable," says **Rosenthal,** "even to indicate how this consciousness comes into being. It may be due to molecular processes in the nerve-cells which result from the received

excitement; but molecular processes are but movements of the molecules, and though we can understand how such movements cause other movements, we are entirely unaware how these can be translated into consciousness."[12] After a careful review of the whole subject, **Ladd** concludes: "**The phenomena of human consciousness must be regarded as activities of some other form of Real Being than the moving molecules of the brain.** They require a subject or ground which is in nature unlike the phosphorized fats of the central masses, the aggregated nerve-fibres and nerve-cells of the cerebral cortex. . . . That the subject of the states of consciousness is a real being, standing in certain relations to the material beings which compose the substance of the brain, is a conclusion warranted by all the facts."[13]

11. Character of the Completed Product.

The completed product of Sense-perception has the following characteristics:

(1) It is a form of distinct **knowledge**;

(2) It is **organized** in certain necessary relations;

(3) It may be **reproduced** in consciousness;

(4) It may be **recognized** as having been known before;

(5) It may be **recombined** with other forms of knowledge;

Such a result is an **idea**, as distinguished from a perception, and, as a psychical product, has a psychical nature. In passing from the world of perceptions to the world of ideas, we enter a new province which we shall partly explore in succeeding chapters.

12. Relation of Soul and Body.

The relation between the conscious self, or soul, and the organic system, or body, is not known directly by

either internal or external observation. The doctrine of their connection is theoretical and, as such, does not belong to Psychology as a science. It is at this point that philosophic systems have their psychological origin.

(1) **Monism** (from the Greek *μονος, monos,* one) assumes that soul and body are of *one substance.* It takes on the form of (*a*) **Materialism** when the soul is regarded as a mere product of material combination, or as a function of matter in motion; of (*b*) **Idealism** when all known objects are regarded as ideas, or products of psychical action, the soul being considered as immaterial and its phenomena as the only other realities; and of (*c*) **Agnosticism** when ignorance is professed concerning the nature of the one substance which is assumed to underlie the modes of both physical and psychical being.

(2) **Dualism** (from the Latin *duo,* two) has usually assumed the form of (*a*) **Mysticism,** inventing the hypotheses of **vision of all things in God, pre-established harmony,** and the intervention of a **tertium quid,** or third entity, to connect the abstract notions of mind and matter. More solid scientific ground is found in (*b*) **Dualistic Realism,** which rests upon the clear apprehension of the soul by Self-consciousness and of the body by Sense-perception as two modes of being so inconvertible in thought and antithetical in attributes that we are obliged to regard them as *two* different, but real, substances, whose relation is established in the psycho-physical unity of our being, but in a manner unknown to us.

The **Monistic doctrines** all ignore the idea of opposition which every language, and in truth every man, seems to note between the phenomena of consciousness and the phenomena of the physical world. **Alexander Bain** may be classed as a **Materialist** in his con-

ception of the body as a "double-faced unity," mind on one side and matter on the other, with the implication that mind is but a function of matter, thus leaving matter in the field as the primary mode of being and only real substance. **J. S. Mill** is an **Idealist**, regarding mind as a "series of feelings," a "thread of consciousness," while matter is a "permanent possibility of sensations." **Herbert Spencer** is a typical **Agnostic**, referring the phenomena of both mind and matter, between which he admits a difference, to an Unknown and Unknowable Absolute Substance. If the existence of either mind or matter is to be brought in question, the balance of evidence, as estimated by the greatest thinkers, seems to be that all is mind. **Dualistic doctrines** have been complicated by arbitrary and metaphysical ideas of both mind and matter. The tendency to regard thought as the essential characteristic of mind and extension as that of matter, may be traced back to **Descartes**, who treated both abstractly and yet as if they were realities. The French Cartesian philosopher, **Nicolas Malebranche** (1638–1715), employed the **vision of all things in God** to account for the unextended soul's knowledge of extended things by assuming a direct vision of ideas in the divine mind (spirit being able to know the contents of spirit), and the **doctrine of occasional causes** to account for its movement of things by special divine assistance on the occasion of a human volition (the divine spirit being omnipotent). **G. W. Leibnitz** (1646–1716), an erudite and ingenious German philosopher, propounded his theory of **pre-established harmony**, by which the Creator is supposed to have ordered the phenomena of mind and those of matter to run parallel, without connection, like two clocks keeping the same time. Others sought to solve the problem of the relation of mind and matter by means of a **tertium quid**, or third entity, thus doubling the difficulty by requiring two impossible connections instead of one. **Dualistic Realism** has been maintained almost universally by mankind, without an attempt at solving metaphysical difficulties. It has been held by the Scotch philosophers generally from the time of **Thomas Reid** to that of **James McCosh** (1811–), an American contemporary representative of the school. It has the advantage of adherence to facts and the rejection of arbitrary or mystical hypotheses. It also avoids a metaphysical, or abstract, conception of either mind or matter, rather regarding both as concrete realities. After all, there is quite as much difficulty in explaining the action of bodies at a dis-

tance, say the earth's gravitative action on the moon, as in explaining the relation of soul and body. A true science will colligate facts as Nature has connected them and confess ignorance where the means of further knowledge cease.

Instead of the division of our nature into body and soul, others have proposed a **threefold division,** or **trichotomy,** into *body, soul,* and *spirit.* This has been defended by a few, as, for example, by the German theologian **Delitzsch** (1813-), in his "Biblical Psychology," as constituting the psychological assumption underlying the language of the Christian Scriptures. That no such assumption is implied, and that the terms "body," "soul," and "spirit" are not to be taken as indicating wholly separate constituents of human nature, is maintained by theologians generally, while the threefold division is wholly repudiated from a purely scientific and philosophical point of view.[14]

13. Sense-perception and Education.

The senses and their presentations are important factors of education. The physical world exists for the soul, not simply to gratify our desires, but to train and unfold our powers. The doctrines laid down in this section show us (1) what should be the earliest studies, (2) in what manner they should be pursued, and (3) how to improve our Sense-perceptions.

(1) The **earliest studies** of childhood should be objective and presentative. The brain-substance of young children is especially adapted to receive impressions. The simplest intellectual discriminations are those of perception. Therefore, the simple elements of knowledge are the proper mental food for children. Concrete facts, not abstract ideas, should be imparted, and whenever it is possible, by actual observation. The **kindergarten system** of **F. W. A. Fröbel** (1782–1852), a German thinker who borrowed ideas of **J. H. Pestalozzi** (1746–1827), the celebrated Swiss

educator, recognizes these truths and was an important advance in the education of children.

(2) The **method of study** should be that of object-lessons. The best object-lessons are derived from objects themselves. Accordingly, the true method of teaching the physical sciences is to display to the learner, so far as possible, the things about which he is learning the facts and laws,—plants, animals, rocks, or stars,—and next to these models or pictures of them. And yet the objects themselves will not suffice. These have always been before men with little practical fruit. Teachers and books are also needful to stimulate, interest and guide. As language is made up of spoken sounds, it should be actually spoken to and by the learner, and the foreign names should be connected with *what they signify*, not with other words with which they have no natural connection. Thus only can we learn to *think* in a foreign language. As languages, imparted by the natural method, are largely objective and concrete, they form suitable studies for the young.

(3) The **improvement of Sense-perception** is attained by its exercise. The eye or the ear is trained to perfection by employing it as an instrument of discrimination. Sailors and hunters, whose discerning powers are wonderful in certain particulars, do not have better eyes than other people, but their owners know how to use them better as means of knowledge. Our sense-organs become adapted to any use we choose to make of them and their value depends upon ourselves. It has been wisely said, "All men look upon the same world, but not with the same eyes or to the same purpose." Teachers should not overlook the value of **play** for children, not only as a means of recrea-

tion, but as affording experimental knowledge of the properties of things and as a means of training the senses. **Industrial education** has a special value in developing the senses and organizing in the brain a true representation of material properties and forces by the adjustment of sensor and motor powers in manipulation.

In this section, on "Sense-interpretation," we have considered :—

1. ***The Double Character of Sense-perception.***
2. ***The Development of the Senses.***
3. ***Two Classes of Sense-perception.***
4. ***Acquired Sense-perceptions.***
5. ***The Localization of Sensations.***
6. ***The Illusions of Sense-perception.***
7. ***Methods of Avoiding Illusion.***
8. ***Percepts and Objects.***
9. ***The Organization of Percepts.***
10. ***Conditions of Organizing Percepts.***
11. ***Character of the Completed Product.***
12. ***Relation of Soul and Body.***
13. ***Sense-perception and Education.***

References: (1) See the little work in French, by Bernard Perez, *Thierri Tiedemann et la science de l'enfant.* (2) Carpenter's *Mental Physiology*, p. 188. (3) *Mind*, July, 1887, p. 324. (4) Ribot's *German Psychology of To-day* (translated by Baldwin), pp. 86, 87. (5) *Id.*, pp. 100, 101. (6) Sully's *Illusions*, pp. 99, 100. (7) Clarke's *Visions; a Study in False Sight*, pp. 26, 29. (8) Tuke's *Influence of the Mind upon the Body*, p. 44. (9) Quoted by Carpenter, *Mental Physiology*, pp. 207, 208. (10) Rosenthal's *Physiology of Muscles and Nerves*, pp. 288, 289. (11) Bernstein's *Five Senses of Man*, p. 34. (12) Rosenthal's *Physiology of Muscles and Nerves*, p. 278. (13) Ladd's *Physiological Psychology*, pp. 606, 607. (14) See Charles Hodge's *Systematic Theology*, II., pp. 47, 51, and Augustus H. Strong's *Systematic Theology*, pp. 244, 247.

CHAPTER II.

REPRESENTATIVE KNOWLEDGE.

DEFINITION AND DIVISION OF REPRESENTATIVE KNOWLEDGE.

Representative Knowledge is knowledge of objects, qualities or relations not actually present to the senses, but represented by ideas. For example, I saw a black horse yesterday, of which I had at the time immediate, or presentative, knowledge. To-day, I have a representative idea of him, although he is absent. This idea is associated with other ideas and is capable of reproduction, recognition and recombination. We have already traced the history of the formation of such an idea, which is the completed product of Sense-perception. We have now to inquire: (1) How ideas are connected in *trains* by **Association**; (2) How they are *reproduced* in consciousness by **Phantasy**; (3) How they are *recognized* by **Memory**; and (4) How they are *recombined* by **Imagination.**

"**Ideas,**" says Lotze, "in contrast to *sensations*, is the name primarily given to those images arising from previous sensations, with which we meet in consciousness. This accords with the usage of speech; we form an idea of what is absent, of what we do not perceive by the senses; but we perceive by the senses what is present,—that of which, on just that very account, we do not need to form an idea. Ideas have their peculiar differences from sensations. The idea of the brightest radiance does not shine, that of the intensest noise does not sound, that of the greatest torture produces no pain; while all this is true, however, the idea quite accurately represents the radiance, the sound, or the pain, which it does

not actually reproduce."[1] When we look directly at an object, we have an immediate knowledge of it, but carry away an "idea" of it. However much abused in common speech, the word "idea" continues to be our best English word for representative knowledge.

SECTION I.

ASSOCIATION.

1. The Relation of Impressions.

Our sense-impressions are experienced in a succession of time and referred to an order of co-existence in space, so that they are not recalled as separate and single but associated in groups. We have already seen that the organization of percepts in certain definite relations is essential to perception. Accordingly, our ideas are connected, constitute a **train of ideas** and recur to consciousness in a certain order and relation. This aggregation of ideas into groups, or trains, is called the **association of ideas.**

Ideas suggest one another in a manner with which we are all familiar. The idea of a hearse brings up ideas about death. The idea of a house suggests the appearance of its inmates. The first word of a song suggests the following words. Thus we find that all our ideas are connected in groups and trains, so that if one idea is uppermost in consciousness, others are almost certain to arise in connection with it and, as we often say, are *suggested* by it. It is this power of suggestion that we wish in the present section to illustrate and explain. We shall see that it does not reside in ideas themselves but in the soul, which reproduces them.

2. The Laws of Association.

As long ago as the time of Aristotle, it was known that representative ideas recur to consciousness according to

certain laws. **Aristotle**[2] laid down three, which have been generally accepted, as follows: (1) **The Law of Resemblance,** according to which ideas that are similar are grouped together and suggest one another; (2) **The Law of Contiguity,** according to which ideas which are related in space or time,—as the parts of an object, or the successive notes of a song,—suggest one another; and (3) **The Law of Contrast,** according to which objects strikingly unlike, as light and darkness, suggest one another. Others have increased these three laws to ten, but without sufficient reason. The so-called **Law of Redintegration** reduces them to one. It was first suggested by **St. Augustine** (354–430), a distinguished Father of the Church, and is usually referred to by writers as Hamilton's reduction of the laws of association, but was rejected as inadequate by him. It may be formulated thus: "*Objects that have been previously united as parts of a single mental state, tend to recall or suggest one another.*"[3] In addition to these laws, which may be called **Primary Laws of Association,** there are certain **Secondary Laws,** so named because they seem to be less universal and more dependent upon circumstances than the Primary Laws. These are (1) **The Law of Intensity,** according to which ideas formed with special intensity of psychical action persist longest and recur most frequently in consciousness; and (2) **The Law of Repetition,** according to which the more an idea is dwelt upon and repeated in thought, the more prominent and enduring it becomes.

Aristotle's statement of the **Laws of Association** is very brief. The English philosopher, **Thomas Hobbes** (1588–1679), brought out the association between "means and end," "cause and effect," "sign and thing signified." Both Aristotle and Hobbes refer these

connections to movements in the physical organism. **John Locke** treats of the connection of ideas as natural and necessary and yet does not rely upon association for any important explanations. **David Hume** really laid the foundations of the modern Associational Philosophy by resolving all our psychical experiences into sensations and the associations between them. **David Hartley** (1705–1757), an English physician and writer, attempted to connect the psychological doctrines of Hume with physiological theories of his own, regarding certain vibrations in the medullary substance of the brain as the cause of sensations, building up the whole fabric of knowledge and feeling out of elementary sensations by the aid of association. The speculations of Hartley were never widely accepted and are now treated with disregard on account of his imperfect psychological analyses and crude physiology. The Scotch philosopher, **Thomas Brown** (1778–1820), adopted the idea of association and, under the name of "**suggestion**," attempted to explain the natural history of certain forms of knowledge and even to account for results formerly attributed to distinct faculties, whose existence he in part denied. Another Scotch writer, **James Mill,** has treated the subject with more precision and delicacy of analysis and has striven to account for such ideas as those of "substance," "cause," "space," and "time" by showing that they are simply "**inseparable associations.**" His son, **John Stuart Mill,** has contributed much to English Associationism, following out even more extensively the doctrines of his father. The Senior Mill was a close student of Hartley and leaned toward Materialism, but John Stuart Mill repudiates the dependence of psychical states upon corresponding bodily states and considers the laws of association as purely psychological. He, however, rejects the idea of an independent *Ego*, explaining the entire being of the soul as consisting in associated sensations. **Alexander Bain** rejects the idea of independent faculties and endeavors to explain the facts of consciousness as physiological effects which are combined by association so as to include the whole fabric of psychical life, the association of ideas being merely the ideal side of certain combinations in the substance of the brain. In his doctrine there is a return to physiological assumptions similar to those of Hartley. **Herbert Spencer** unites the physiological origin of conscious states with the doctrine of association, supplemented by the process of evolution. For him sensation, as a correlate of a physical

process, is the elementary fact in the natural history of mind. By the process of association, which corresponds to the grouping of nervous stimulations, the higher psychical experiences are evolved out of simple sensations. Thus the idea of association is made to serve the purpose of explaining the development of the *Ego* and of its faculties.

3. The Primary Laws of Association.

A closer attention to the three primary laws of association is desirable. Let us examine them in their order.

(1) **The Law of Resemblance.**—Similar ideas are frequently associated together. One beautiful landscape reminds us of another. The face of a stranger recalls the face of an absent friend, because of the resemblance. A very cold day causes us to think of another like it years ago. There is no doubt that this is a general law of association of ideas. What is the connection between the two ideas thus said to be associated, or brought into consciousness together? Is it a physical or a psychical connection? Is there a place in the brain where ideas are deposited, assorted according to their kind, so that the communication of motion to one conveys it to another? The crudity of this explanation is evident the moment we consider (*a*) that Physiology and Anatomy give us no warrant for regarding the brain as a *storehouse* where things are deposited; (*b*) that an idea is not a *thing* having physical properties; and (*c*) that an idea is a *psychical* product, utterly inconceivable except as the state of a conscious being that at once possesses and produces it. The facts are more easily harmonized if we suppose that similar ideas occur together, because the conscious soul that first produced them is thrown into such a state as to *re*produce them. The association of similar ideas would seem, then,

to result from an activity of the soul rather than from any connection between ideas themselves.

(2) **The Law of Contiguity.**—When things have been known as adjacent in space, or events as consecutive in time, the ideas of them are associated. The idea of curling smoke suggests the fire that produces it. The odor of a rose suggests the form and color of a rose. One letter in the alphabet suggests the next following. We repeat a verse easily in the natural order, with difficulty or not at all in the reverse order. What is the connection here? Is it physical or psychical? We can mentally reverse the order, and as soon as the mind has become accustomed to it, the new order is as easy as the old. The facility of transition is the result of a psychical habit. We conclude that in the case of contiguity also the connection is a psychical one, that is, one created by the mind through its own activity.

(3) **The Law of Contrast.**—On a very warm day we wish for a cold one, on a very cold day we wish for a warm one. Our present misery leads us to think of our former good fortune. There is no doubt that certain ideas are thus brought together in consciousness because they are unlike. Whatever physical explanation we might give of the law of resemblance certainly could not apply to the case of contrast. If similar ideas lie connected in the brain, then dissimilar ideas do not. But suppose we regard all ideas as products of the soul, resulting from the state into which it is thrown. Then the reaction from one state may occasion the production of its opposite, as if seeking an equilibrium.

It is assumed by **Bain**[4] and some other Associationists that each sense-impression is recorded in a cell of the brain. It leaves, so to

speak, a *scar* upon its appropriate cell. The cells are connected by nervous fibres so as to form circuits over which nervous force can travel as electricity travels over a system of telegraphic wires. The association of ideas, then, results from the order in which the current moves from cell to cell, producing in each a discharge which, on its subjective side, is a revival of the idea deposited there. Thus our whole mental life is the result of a succession of such nervous discharges in the brain. The order and connection of our ideas depend entirely upon the order in which these cells are discharged, and this upon the line of least resistance of the nervous current. The inadequacy of this conception of the mechanism of association is evident from the following considerations: (*a*) It has never been proved that any particular "idea" has any definite location in any brain-cell; (*b*) it has never been proved that the different cells have any such specific structure or properties as to enable them to retain for the length of time ideas are retained any impression whatever; (*c*) it has never been proved that consciousness of mental states follows any line of nervous current through the brain or that there are any restricted paths for such currents; (*d*) the duality of the brain, it being divided into two hemispheres, renders doubtful the distribution claimed; (*e*) all that we know about an "idea" leads us to doubt that it can be preserved in a cell of matter composed of atoms; (*f*) an "idea" is a psychical product, not a physical thing, and cannot be shown to exist outside of a conscious mind.

4. The Secondary Laws of Association.

These have been variously stated, but they may be reduced to the following two:

(1) **The Law of Intensity.**—Ideas formed with special intensity of psychical action persist in the consciousness and endure longer than those formed with less intensity. This law is not universal. Our clearest and best formed ideas do not persist in the sense that they continue in consciousness, nor do they recur except when they are in connection with other kindred ideas. Still, it must be admitted that, in general, such ideas are more prominent

than others. But they simply reveal a special energy of the soul in their formation and show the importance of the psychical factor. What the soul has once done with energy or interest it repeats with energy or interest on occasion. Feeling is a link of association and constitutes the important element in what we designate as "interest."

(2) **The Law of Repetition.**—A repeated act is easier to perform than an unaccustomed act. This is the law of habit. A lesson gone over with care many times can be repeated without the book, because the soul has acquired the habit of creating certain states of consciousness in a given order, and hence the repetition of the lesson becomes progressively easy.

Too little notice has usually been taken of **association through feeling**, which as a constant element of experience is often the connecting link between wholly dissimilar and otherwise wholly unassociated ideas. The following is a suggestive passage by an American psychologist, **John Dewey** (1859–), upon this point: "Feeling, in all cases, seems to serve as a matrix in which ideas are imbedded, and by which they are held together. There is no more permanent tie between ideas than this identity of emotion. The power of a flag to awaken patriotic ideas and resolves, of a cross to arouse religious meditation or devout action, is due to the tie of feeling rather than to that of an intellectual process. . . . . **The poet** not only detects subtler analogies than other men and perceives the subtler link of identity where others see confusion and difference, but the form of his expression, his language, images, etc., are controlled by deeper unities. These unities are unities of feeling. The objects, the ideas, connected are perhaps remote from each other to intellect, but feeling fuses them. Unity of feeling gives artistic unity, wholeness of effect, to the composition. When unity is wanting there is no poetry; where the unity is one of reflection, purpose, or argument, we instinctively feel that the composition approaches prose."[5]

5. The Laws of Association Resolved.

The resolution of the Laws of Association into the Law of Redintegration fails to formulate the whole truth, for it cannot be held that all similar ideas or all contrasted ideas have ever united to form one mental state. This Hamilton distinctly saw and enounced. A more successful attempt to resolve these laws into a single universal principle has been made by **Porter**: "*The mind tends to act again more readily in a manner or form which is similar to any in which it has acted before.*"[6] This statement avoids the objection to the Law of Redintegration, for in reproducing a given idea it is an easy transition to another similar to it, and also by reaction to one contrasted with it. This conception of the facts and laws of association of ideas has the following advantages:

(1) It finds the cause of the connection of ideas in a **psychical, rather than a physical, agent.** It having been shown that ideas are psychical products, it is vain to look for the cause of their connection in physiological processes or anatomical arrangements in the body. Physiology having failed to explain the origin of a simple perception, it must fail also in explaining the connection between ideas.

(2) It finds the cause of the connection of ideas in **that which confessedly connects them, the soul itself.** Ideas without a conscious subject knowing and combining them can have no conceivable existence. Apart from the conscious subject they do not even exist. Their connection is in consciousness, not in a physical substratum. Even upon a physiological hypothesis, ideas are not connected until they are brought together in consciousness.

(3) It avoids every form of grotesque and speculati

notion concerning **the separate and substantive existence of ideas,** which every materialistic hypothesis must assume. Science knows nothing of a "theatre" or "show-place" of ideas, to borrow figures from Locke and Hume, nothing of the "pigeon-holes of the mind," of the popular dialect, where "ideas" are stored away like documents in a secretary. The anatomy of the brain reveals nothing of this kind. The minutest photography can copy no images of ideas in the brain. Ideas exist in the soul and for the soul and have no existence out of it. The doctrine that the soul reproduces its ideas, rids us of all unscientific hypotheses about the "attractiveness of ideas for one another." All the phenomena of association are comprehended in the one law of Habit, according to which the soul resumes those states which it has first assumed under the stimulation of sense-impressions.

To speak of the **"attractive force of ideas,"**—an expression used by the erudite Italian **François-Marie Zanotti,** who (in 1747) employed it as the title of an ingenious book,—is indicative of the same unscientific condition of mind that is betrayed by such an expression as, "Nature abhors a vacuum." It is a product of that tendency of mind which impels men to put abstractions in the place of concrete facts and inductions from them. To speak of "ideas" as "residing" in cells of the brain is a crudity of the same order. An "idea," as known to us, is not endowed with any property of attractiveness for other ideas. Nor are ideas of such a nature that they can be referred to particular cells of the brain. My idea of a horse, for example, cannot be referred to any single cell. The cell is a living and constantly renewed material mass from which any image would soon be obliterated, if it were capable of receiving one, which it is not known to be. The act of combining images in any order at will, would be impossible, if images were imprinted in stationary and immovable cells in the brain. This mode of conception is a residuum of that primitive hypothesis of **Democritus,** that objects throw off images (*eidola*) which enter into the head through the

organs of sense and serve us as representatives of the things themselves. This mechanical conception still lingers in the idea of representative "impressions," fixed on cells as a seal on a tablet of wax. We cannot too often repeat that modern science recognizes nothing of this kind. The simplest sensation is a vital process requiring the reaction of the conscious subject. The simplest perception is a psychical result. An idea, then, is not a physical thing or the mark or property or product of a physical thing, but a product of the soul and non-existent except as the soul gives it being.

f. The Place of Association in Representative Knowledge.

The word "Association" properly designates that connection of our ideas into groups and trains which we constantly experience. Association is so far from explaining any thing, that it requires to be explained. The facts of association are not explained by the laws, which are mere generalizations, and imperfect ones, of the facts. These facts require for their explanation a cause that is able to produce them. The soul is the ideating agent, and the soul's tendency to repeat its own acts explains both the facts and the laws of association. The associational psychology, which would explain the nature of the soul by the composition of sensations, is inadequate and erroneous. No sensation can be explained without the soul, and the activity of the soul alone can explain the association of ideas. The theory of Associationism fails in three particulars to give an account of the psychical facts:

(1) It fails to explain the voluntary **reproduction** of ideas. We are conscious of the power to reproduce ideas, with certain limitations, at will. We can reproduce ideas formed *years ago* and institute a connected train of representations.

(2) It fails to explain the **recognition** of representative

ideas. We not only can reproduce, we can recognize certain representative ideas as known *by us before.*

(3) It fails to explain the voluntary **recombination** of ideas. We have the power to combine ideas in *new relations,* for example, to construct in the mind a building different from any we have seen and to fill it with objects which we have never seen together.

The Association of Ideas does not give an account of these phenomena of our conscious experience. It fails, then, to explain the soul's life without the assumption of special powers belonging to the soul and exercised by it. We shall endeavor to describe the operation of these powers in the following sections.

If the positions here taken with reference to Association and its laws should require further defense in order to render them acceptable to those otherwise instructed, the following statements may be helpful. It is here assumed that the soul is a real being endowed with powers, or faculties. This conception has not yet given place to the "**Psychology without a soul**" which is so interesting to certain theorists. High authorities on the subject of "Physiological Psychology" concede this point. **Ladd** says: "Finally, then, *the assumption that* **the mind is a real being,** *which can be acted upon by the brain and which can act on the body through the brain, is the only one compatible with all the facts of experience.*"[1] It is the mind, or soul, that knows ideas and in which ideas are associated. We should, then, seek the explanation of association in the soul, not in the brain. We find that explanation in the law of habit, or customary activity of the soul. If the soul is a real being, habit may be attributed to it as well as to a physical organ. "**Gassendi** (1592–1655), a French philosopher, has very ingeniously compared habitude to a paper which easily resumes the folds according to which it was folded before. The Scotch philosopher, **Dugald Stewart** (1753–1828), looked upon habitude as a result of the association of ideas. This is, however, the mistaking of the effect for the cause. He sees the close relation, even the identity, between both phenomena, habitude.

and the association of ideas. He recognizes that the one phenomenon is the more general and the other only a kind of particular instance of the same; but he does not notice that the association of ideas is only one of the most frequent and remarkable forms of habitude. . . . . If we now proceed to the **definition of habit and habitude,** we shall say, **Habit** is the disposition of a psycho-physical organism by which it is enabled on given (outer or inner) inducements directly to perform relatively similar functions, simple or complicated. . . . . **Habitude** is, furthermore, the development of this disposition by the repetition of relatively similar impressions and the reactions following them."[8]

7. The Relation of Association to Education.

Association of ideas has a twofold bearing upon education, because of the importance (1) of associations formed by others and presented to the learner and (2) of associations formed by the learner himself.

(1) **Associations formed by others.**—There are certain groups and trains of ideas that have been forming for many generations and constitute an inheritance of humanity embodied in language, institutions, and laws. A great part of education consists in the acquisition of this accumulated mass of already organized knowledge. It is conveyed through language, whose component words are signs of ideas and whose sentences stand for organized groups of ideas. All speech and literature, from the simple sentences addressed to children to the most abstruse philosophical treatises, represent such associated ideas. Literature has been called "condensed Anthropology," because it contains the combinations of ideas of all the men whose writings are preserved to us. These associations, or groupings, of ideas are conveyed to the mind of the learner ready-made. Hence the educational meaning of the expression, "Line upon line and precept upon precept."

The primer, the catechism, and the text-book are mediums of producing in others ready-made groups and trains of ideas that are believed to be of moral or scientific, that is, of educational, value. A psychical habit considered by the teacher desirable is induced in the learner by the study of certain combinations of ideas, until, finally, they become a part of the learner's mode of thinking. This is the very essence of the process of **instruction** (from the Latin *instruĕre*, to build in).

(2) **Associations formed by the learner.**—Education is not simply a filling but, in part, an unfolding process. The learner must be trained to group his ideas according to natural principles. To this end, studies should be pursued (*a*) **comparatively,** so as to bring similar facts together at the same time, to be referred to a common principle; (*b*) **historically,** so as to connect facts in an order of natural contiguity, which will be a chronological and a causal order; and (*c*) **analytically,** so as to bring to notice the important differences or points of contrast. These methods are adapted to the cultivation of the Intellect and the strengthening of independent judgments, and are, therefore, avoided by teachers who wish to impress ready-made formulas upon the mind rather than to develop its faculties. The **intensity** with which study is pursued affects both the reproduction of what is learned and the increase of intellectual power. The dull and listless mind needs to be stirred and inspired, and the power of inspiration is, therefore, an essential quality in a good teacher. Enthusiasm is awakened chiefly through the feelings,—the desires and affections;—but, like every form of feeling, it is contagious and so may be imparted by one who possesses it and can hardly be generated by one who does not.

Repetition is directly productive of habitude, which it is the end of education as **discipline** to produce. For this reason, lessons should be gone over many times in proportion to their difficulty and reviews are important. It is, however, a mistake to substitute repetition for intensity in our studies and thus encourage lassitude with the hope of indefinite chances of making up in reviews.

The value of **language as an instrument of analysis** is of the highest importance, and yet is often overlooked. Suppose I look out of my window and see a black horse running swiftly. The whole picture, as presented by the sense of vision, constitutes one single image. It remains one and single until I have occasion to describe it in words. The moment I attempt to do so, an analytic process, or process of resolution into parts, is necessary. I must name the animal "horse," his color, "black," his act, "running," his speed, "swiftly," and I must indicate whether it is a definite or an indefinite black horse that runs, and so must use an article, "a" or "the." Putting all together, I say, "*A black horse is running swiftly*," a sentence in which my one visual image is broken up by five distinctions, each expressed in a separate word. There is truth in the proverb, "No one knows a thing until he can tell it." The truth in it is, that expression in words increases our knowledge by compelling us to regard objects analytically. The study of language is, therefore, necessary to the proper study of things, and should accompany it. Physical science without verbal aid is impossible. It required long linguistic training before the human species ever regarded any object scientifically, and no unlettered people has ever made any advance in the scientific study of nature.

On the other hand, **the study of words without things** dooms the Intellect to stagnation. Having received a formula, if we rest in it, we make no advance. Most of the error in the world is perpetuated through formulas which are accepted as authoritative without comparing the combinations of words with the combinations of things. **Error** is usually nothing more than false associations of ideas. **Truth** is the correspondence of ideas, singly and in their combinations, with reality.

In this section, on "Association," we have considered:—

1. The Relation of Impressions.
2. The Laws of Association.
3. The Primary Laws of Association.
4. The Secondary Laws of Association.
5. The Laws of Association Resolved.
6. The Place of Association in Representative Knowledge.
7. The Relation of Association to Education.

REFERENCES: (1) Lotze's *Outlines of Psychology*, p. 28. (2) Aristotle's *De la Memoire et de la Reminiscence*, referred to in Hamilton's edition of *Reid's Works*, Note D***, where the history of the Doctrine of Association is fully discussed. (3) Hamilton's *Lectures on Metaphysics*, p. 435 and edition of *Reid's Works*, Note D***. (4) Bain's *Body and Mind*, pp. 110, 112. (5) Dewey's *Psychology*, pp. 106, 107. (6) Porter's *Human Intellect*, p. 293. (7) Ladd's *Physiological Psychology*, p. 667. (8) Radestock's *Habit and its Importance in Education*, pp. 29, 30.

SECTION II.

PHANTASY.

1. Definition and Nature of Phantasy.

Phantasy (from the Greek *φαντάζειν*, *phantazein*, to cause to appear) **is the soul's power to reproduce ideas previously formed,** in the absence of the objects themselves. Sitting in my room, I can reproduce ideas, derived from Sense-perception, of the exterior of the building, which I cannot now immediately know. This is an act of Phantasy. By many writers on this subject it would be called an act of Memory. The function of

Memory is to recognize, not to reproduce. Inasmuch as reproduction may take place without recognition, we must ascribe to the soul a power of reproduction distinct from the power of recognition, that is, Phantasy as distinct from Memory.

"Many children," says **Clarke,** "especially very young children, possess the power, when they have closed their eyes in the dark, of surrounding themselves, by a simple act of volition, with a **panorama of odd sights.** The objects and persons evoked are not of a definite character, and are commonly queer and strange. They come in a throng, tumultuously, and disappear on opening the eyes. Most children who possess this power like to exercise it and see the show which they can call up in the darkness. Others are unwilling to exercise it, and are afraid to go to bed in a dark room, on account of the crowd of ugly beings which float in the air around them as they try to go to sleep."[1] **De Quincey,** the writer and critic, who was aware of this peculiarity in children, speaks of it in connection with the effects of opium upon himself: "The first notice," he says, "I had of any important change going on in this part of my physical economy was from the reawakening of a state of eye generally incident to childhood or exalted states of irritability. I know not whether my reader is aware that many children, perhaps most, have a power of painting, as it were, upon the darkness all sorts of phantoms; in some that power is simply a mechanic affection of the eye; others have a voluntary or semi-voluntary power to dismiss or summon them; or, as a child once said to me, when I questioned him on this matter, 'I tell them to go, and they go; but sometimes they come when I don't tell them to come.' Whereupon I told him that he had almost as unlimited a command over apparitions as a Roman centurion over his soldiers."[2] Dr. Clarke continues: "An acquaintance of the author, who is now between fifty and sixty years of age, says that in his childhood, after closing his eyes at night, he could, and often did, by an act of volition call troops of queer forms around him. As years passed on and manhood approached, he lost the power of subjective vision, and though he has frequently tried since childhood to people the darkness in the old way, he has never been able to do so."

2. The Representative Idea.

The character of the representative idea is variable, being much more like the original idea obtained through Sense-perception in some persons than in others. It tends to become more dim and faint also with the progress of age. An ingenious English scientific investigator, **Francis Galton** (1822–), has shown by means of answers to questions distributed to a large number of persons that what he calls "**visualization,**" or ability to reproduce images, varies widely among persons of the same race and age. Among the **results of Galton's inquiries** are three of special interest: (*a*) Men accustomed to abstract thinking are weak in visualizing power; (*b*) capacity for vivid reproduction of images does not vary with perceptual power in the use of the senses; and (*c*) it does not vary with the tendency to dream. In general, we may say of the representative idea reproduced by Phantasy:

(1) **It is less vividly realized than the original.** It is usually an exaggeration for one to say that ideas reproduced are as vivid as perceived objects, still it is certain that in exceptional cases there is a near approach to such distinctness.

(2) **Representative ideas are recombined to represent complex objects only slowly and with a sense of effort,** and the whole does not at once stand out in its completeness before consciousness. Let the learner try to recall the whole of any large building with which he is familiar and this will be illustrated.

(3) **The representative image usually contains fewer elements than the original.** Sometimes only a mere frag-

ment remains. At other times every detail can, with time, be reproduced.

(4) **The representative idea is in its nature an idea, not a thing,** and although it may occasion an act of projection so that the resulting image is like a real object, still the idea, previous to such projection, is not like the original but simply represents it.

An idea of **Galton's method** may be gathered from the following directions, sent out to the persons questioned by him :

"Before addressing yourself to any of the Questions on the opposite page, think of some definite object,—suppose it is your breakfast-table as you sat down to it this morning—and consider carefully the picture that rises in your mind's eye.

"1. *Illumination.*—Is the image dim or fairly clear ? Is its brightness comparable to that of the actual scene ?

"2. *Definition.*—Are all the objects pretty well defined at the same time ? or is the place of sharpest definition at any one moment more contracted than it is in a real scene ?

"3. *Coloring.*—Are the colors of the china, of the toast, bread-crust, mustard, meat, parsley, or whatever may have been on the table, quite distinct and natural ?"

He goes on to say, " To my astonishment, I found that the great majority of the men of science to whom I first applied protested that mental imagery was unknown to them, and they looked on me as fanciful and fantastic in supposing that the words 'mental imagery' really expressed what I believed everybody supposed them to mean. . . . . On the other hand, when I spoke to persons whom I met in general society, I found an entirely different disposition to prevail. Many men, and a yet larger number of women, and many boys and girls, declared that they habitually saw mental imagery, and that it was perfectly distinct to them and full of color." He was led to conclude, "that an over-ready perception of sharp mental pictures is antagonistic to the acquirement of habits of highly-generalized and abstract thought, especially when the steps of reasoning are carried on by words as symbols."[3] It is a profitable exercise for each member of the class to state how representative images seem to him.

3. The Modes of Reproducing Images.

Although ideas are not identical with single images, we can best approach the explanation of the operation of Phantasy in the reproduction of ideas by considering the three modes by which images may be reproduced.

(1) **Physical Stimulation.**—The results of physical stimulation, that is, of original action upon the sense-organs in perception, sometimes persist in the nervous organism as "after-sensations" a considerable time after the original impression. Prolonged work with the microscope will cause images to live in the eye for many hours and to recur vividly for many days. The echoing of a song in the ear some time after the singing has ceased is another example. Sounds have been known to "ring" in the ears for fifteen days after musical concerts. Now the question is, How long do these effects continue? May they not continue forever? They certainly do not continue forever in consciousness, for sights and sounds usually succeed one another without interference, and such conscious persistence is the exception. If physical stimulation *disposes* a part of the nervous organism to certain states, however, some new stimulation, not necessarily physical, may revive them.

On the **effect of physical stimulation, Lewes** says: "According to the old psychologists, the sensorium is a 'chamber of images,' a spiritual picture-gallery, preserving all the scenes and events that have passed before sense; no impression is ever lost; it may fade into twilight, or vanish in the darkness, but it keeps its place in the picture-gallery, and will be visible every time the closed shutters are re-opened. This is obviously no explanation, but a metaphorical re-statement of the fact observed. What calls for explanation is the contradiction of a continued persistence in consciousness when

the persisting states are unconscious, and the capability these states have of suddenly, after many years, again starting into consciousness. In what sense can we admit this persistence? The conscious states disappear: the feelings as feelings no more exist after the subsidence of their excitation than the last year's roses exist. But something remains. The organism has traces of its past excitations and their re-excitation is easy. This is not only true of conscious experiences, it is true of experiences which at the time were unconscious. Every one knows how the objects we did not observe in passing along the street may be vividly seen when afterwards we recall that passing. There are also cases on record of idiots who under acute maladies have manifested a memory of events and ideas which previously they had not seemed to notice; scarcely able to articulate a few words in their ordinary condition, they now speak fluently and eagerly of events which passed years ago. It is certain that the organism is modified by excitations; but it is not at all certain that the feelings which accompany or result from such excitations persist after the subsidence of their causes. To say that they still continue to exist in the mind is not more rational than to say that melodies continue to exist in the musical instrument after the sonorous vibrations have ceased, or that the complicated and fluent movements of a fencer continue to exist after he has laid aside the foils. By again striking the notes in the same order of succession each melody may be reproduced; by again taking up the foil the fencer may once more go through the former graceful movements; and so by stimulating the sensorium again its reactions may be reproduced."[4]

(2) **Physiological Stimulation.**—Admitting that physical stimulation has pre-disposed the organism to be thrown into certain conditions, we may accept the proposition of Lewes, that "the reinstatement of a perception is complete when the original conditions of that perception are again in operation; but its reinstatement in the form of an image of the object is only partial, because the objective sensible conditions are not reproduced." If precisely the conditions of perception were reinstated,

there would be a *new* perception. Assuming in the organism an acquired facility for certain combinations, and adding the physiological stimulation of blood-supply, nervous currents, etc., for normal stimuli, and of opium, alcohol and other poisons, for abnormal stimuli, we may be able to account theoretically for a partial reinstatement of the conditions of perception, and thus explain the reproduction of images. When that is done, however, we find ourselves where we were when we had reached the point in Sense-perception where a physiological condition becomes a psychical condition, where a state of the organism becomes a state of consciousness. We saw there that a reaction of the self-conscious soul was necessary to the simplest sensation or perception, and so here we find it necessary to add to the physiological conditions of reproduction a psychical reaction.

The accumulation of observed facts is now so great and has been so fully subjected to analysis, that no well-informed person can doubt that **activity of brain always accompanies activity of mind.** This is shown (*a*) by the destruction of brain tissue in all intellectual operations, showing a physical decomposition as an accompaniment of psychical action ; (*b*) by the sense of fatigue and exhaustion in the nervous system after prolonged mental effort, and (*c*) by the renovation derived from rest and sleep as well as from certain specific nerve-foods. It may be further stated as beyond all doubt, that **states of brain at all times affect and sometimes determine states of mind.** This is proved (*a*) by the general relation between intellectual power and the size, form and quality of the brain and its attachments, microcephalism (abnormal smallness of brain) being a mark of idiocy and certain cerebral conformations usually indicating mental deficiency; (*b*) by the results of vivisection and accident, showing that the absence or injury of certain parts of the brain and nervous system involves the total loss of certain psychical powers, or at least of their manifestation; and (*c*) by diseases of the brain

which give rise to impotency or confusion of mind, varying from slight delirium to raving insanity. These are simple facts of observation which every form of psychical doctrine is compelled to recognize, however idealistic its tendencies may be, and to which it must also adjust itself, if it would demand scientific credit.

(3) **Psychical Stimulation.**—The psychical reaction which we have seen to be necessary to any reproduction of ideas may itself reinstate in the organism some of the conditions of perception so as to recreate, as it were, a very complete image of an absent object. Our common experience illustrates this power of the soul to determine conditions of the organism. Try to recall vividly the exterior of the building in which you are sitting, and you will have an example of the reproduction of a series of images in the brain. That **the very same parts are affected as were involved in original perception,** is maintained by psychologists as widely removed in their explanations as **Hamilton** and **Maudsley.** The proof of this is thought to be found in the physical effects that follow certain ideas, as nausea in the stomach from certain disgusting ideas of food, or the setting of the teeth on edge by the idea of a squeaky saw, or the puckering of the lips from the idea of crab-apples. We not only induce certain images in the physical organism, but we have some power to banish them. The confusion and disorder of images in dreams and delirium, as compared with the order and rational direction of thought when consciousness is under voluntary control, show that connected thought is a psychical, not a cerebral, process.

The power of psychical reaction is sometimes very great. **Nicolai,** of Berlin, whose case (1791) has become well known, was able

to produce "ideational cerebral pictures," or phantoms, at will. The case of the German poet **Goethe** is still more interesting and is thus reported by himself: "As I entered my sister's house for dinner, I could scarcely trust my eyes, for I believed I saw before me a picture by Ostade so distinctly that it might have been hanging in a gallery. I saw here actualized the position of objects, the light and shade and brownish tints and exquisite harmony, and all which is so much admired in his pictures. This was the first time that I discovered, in so high a degree, the gift, which I afterwards used with more complete consciousness, of bringing before me the characteristics of this or that great artist, to whose works I had devoted great attention. This faculty has given me great enjoyment, but it has also increased the desire of zealously indulging, from time to time, the exercise of a talent which nature seems to have promised me."[5] "Dr. Wigan knew **a painter** who painted three hundred portraits, large and small, in one year. The seeming impossibility of such a feat was explained by the fact that he required only one sitting and painted with great facility. 'When a sitter came,' said he, 'I looked at him attentively for half an hour, sketching from time to time on the canvas. I wanted no more—I put away my canvas and took another sitter. When I wished to resume my first portrait, I took the man and set him in the chair, *where I saw him as distinctly as if he had been before me in his own proper person.*"[6] A somewhat similar story is related of the **sculptor David.** Requested to execute the bust of a dying woman, without exciting her alarm, he presented himself as a jeweller's man, offering some trinkets for her inspection, in the meantime so observing her features as to enable him to reproduce a good likeness.[7] Such cases are certainly unusual and extraordinary, but they show that, in less degree, the soul has command over the organism in the reinstatement of images.

4. Hallucination.

It is now easy to understand the nature of hallucination. We have found illusion to be a false interpretation of a real sense-impression resulting from (*a*) the environment, (*b*) the organism, or (*c*) expectation. **Hallucination** is a false perception, without any material basis, and orig-

inates in the soul itself. It is not a false interpretation, but a false projection of an idea. It may or may not be accompanied with **delusion**, which is a false belief. We may have illusions and hallucinations without being deluded, if we do not believe in them as real.

Sully, in his work on "Illusions," cites some **examples of hallucination.** "**Malebranche**, for example, is said to have heard the voice of God calling him. **Descartes** says that, after a long confinement, he was followed by an invisible person, calling him to pursue his search after truth. **Dr. Johnson** narrates that he once heard his absent mother calling him. **Byron** tells us that he was sometimes visited by spectres. **Goethe** records that he once saw an exact counterpart of himself coming towards him. . . . The **hallucinations of the insane** are but a fuller manifestation of forces that we see at work in normal life. . . . The hallucinations of insanity are due to a projection of mental images which have, owing to certain circumstances, gained a preternatural persistence and vividness. Sometimes it is the images that have been dwelt on with passionate longing before the disease, sometimes those which have grown most habitual through the mode of daily occupation, and sometimes those connected with some incident at or near the time of the commencement of the disease."[8] The **dividing-line between sanity and insanity** is where illusions and hallucinations cease to be recognized *as such* and the person becomes the victim of *delusion*, that is, of false belief.

5. Unconscious Mental Modifications.

Sir William Hamilton has developed Leibnitz's doctrine of "**obscure ideas**" into a theory of "**unconscious activities of mind,**" which he employs to explain the reproduction of ideas. According to him, ideas are possessions of the mind, but pass into a condition of "latency" from which they are recalled into a condition of "consciousness." "Extensive systems of knowledge may, in our ordinary state, lie latent in the mind beyond the sphere

of consciousness and will; but in certain extraordinary states of organism, may again come forward into the light, and even engross the mind to the exclusion of its every-day possessions."[9] **Hamilton's arguments for this doctrine are:** (*a*) The ability to recall events long after every trace seems to have passed away; (*b*) the minimum object visible can be divided into parts which singly cannot be seen, but which must together affect the power of perception, so that every effect is made up of causes below consciousness; (*c*) a practiced musician is not conscious of every movement or note in his music, and yet the whole is made up of these parts; and (*d*) in a train of ideas we often leap over several without being conscious of them, but can afterward repeat the train with full consciousness. In answer to all this it seems necessary to say simply, that we are either conscious of an idea, or we are not; if we are, it is not latent; if we are not, it is not an element of mind at all. That which renders a state psychical is that we are conscious of it.

Bascom seems to have **refuted Hamilton** in the following passage: "Mental and physical phenomena are cut broadly and deeply apart by the fact that the one class appears exclusively in consciousness, and the other as exclusively out of consciousness. The last are actual or possible objects of some organ of perception, are somewhere located in space, and thus open to the outside action of mind through the senses; the first are within the mind, evincing their existence exclusively by their effects in consciousness. Not to exhibit anywhere, to any actual or supposable organ of sense, any phenomena, is, in the physical world, not to exist. Existence is affirmed only on the ground of some effects, however subtile, in sensible objects, and directly or indirectly, in organs of perception. We never hear of physical facts above or below space, beyond all possible tests of perception; since such phenomena would be utterly unable to manifest this existence, to give any proof of it. The very

notion of physical being arises from that of physical effects, under suitable circumstances open to observation. Thus also should mental phenomena be regarded. There is likewise only one known field for these,—consciousness. All, aside from physical facts, that occurs outside of this, is necessarily unknowable. An alleged fact, which is to be found anywhere as a fact, has but two avenues through which it can make itself known,—the senses and consciousness. . . . To assert, therefore, the existence of other modifications or changes than those which respond to these two methods of knowing, is to affirm some third field wherein events happen whose nature is utterly unknown to us, and of whose being we can at most have only an hypothetical and inferential knowledge."[10]

6. Unconscious Cerebration.

William B. Carpenter (1813–1885), an eminent English physiologist, has substituted for Hamilton's theory of "unconscious mental modifications" a theory of "**unconscious cerebration,**" using the term "**cerebration**" to signify the automatic activity of the cerebrum, or brain.[11] He holds that we are conscious of a part of the activities of the brain, of another part we are not conscious. The trains of ideas are, therefore, liable to interruption by a discontinuance of consciousness as to what some part of the brain is doing, and by the sudden emergence into consciousness of what the brain has done without our knowledge. We cannot deny the activity of the brain, but we may very well deny that its movements control our trains of ideas. We are conscious of the ability to direct the activities of the brain, as we have already shown. Besides, we have no evidence that the brain elaborates "ideas," which we have seen to be psychical products, and, therefore, psychical states, not cerebral states. The brain does, however, serve as the organ for producing "mental imagery."

We shall return to the consideration of unconscious cerebration in our treatment of Will, in Part III, and need not discuss it any farther in this connection. The reason for this postponement of the subject is, that we shall find in the processes of elaborative knowledge and in the activities of Will grounds for believing that cerebration does not wholly determine psychical states, but that certain psychical states determine cerebration.

7. Dreams and Reverie.

In dreams and reverie, we experience a desultory, disconnected, and sometimes grotesque and disordered flow of ideas, which we may believe to be suggested by physical causes. Excitement, hunger and indigestion are well known causes of dreams. In these phenomena there is consciousness, but not self-direction. The Will is usually powerless in dreams. But in our waking moments, when the Will is in command, the course of ideas is self-directed and rational. Our ideas are ordered for the accomplishment of conscious and self-formed purposes. This shows the prominence of the psychical factor and demonstrates that, although Phantasy employs the organic mechanism in reproducing ideas, it is a psychical, not an organic activity. Without the elements of consciousness and attention, ideas are not reproduced. Cerebration is an *aid* to vivid reproduction, but **reproduction is, in the last analysis, a process of the soul.**

That **cerebral action is but the servant of the soul** is evident from another point of view. "The vital power in many and cunning combinations precedes the nervous system. This system has been from the beginning simply the means to farther development in a direction previously indicated. The automatic action of the nervous system has preceded by a long period its conscious action. Consciousness has been superinduced on a system relatively complete within itself. The higher is not added for the sake of the lower;

but the lower is put to the uses of the higher. So true is this that the organ of consciousness, even after it has been woven into the nervous web below it, can be removed, and a large portion of automatic action remains. That the last sensor state in its passage into the cerebrum, is not united causally to the first motor stimuli issuing from it, is probable : for (*a*) if this were true, the cerebrum would simply repeat the functions of lower ganglia ; and (*b*) in that case, consciousness would be a superfluous addition. Plainly, consciousness intervenes between the two in a way that interrupts simply automatic connections. In this fact lies its entire significancy." [12]

8. The Operation of Phantasy.

Phantasy, as the power of reproducing ideas, is the power which the soul possesses to create in itself states similar to those experienced before, on the presentation of a suitable occasion. That occasion may be either :

(1) **The next previous state** in which the soul finds itself, so that the soul reproduces an idea under the law of habit, reviving a mode of consciousness in which it has been before; or

(2) **A condition of the nervous system,** furnishing a ground of reaction similar to that furnished by an original sense-impression; or

(3) **A new perception,** placing the soul in conditions favorable for the reproduction of a given idea under the law of habit.

In any case, **it is a reaction of the conscious self that reproduces the idea** and, through its connection with the physical organism, it can reinstate some, in rare instances all, of the physical conditions of perception. As thus explained, ideas have no separate and substantive existence, but are reproduced in consciousness by a reaction of the soul similar to that which originally produced them.

This doctrine is a **repudiation of every theory of retention,** mystical, like Hamilton's "unconscious modifications of mind," or materialistic, like that of "unconscious cerebration." Ideas are not in any exact sense *retained* by the mind. If retained at all, they are retained out of the mind, but then they lose their character as ideas and so are not retained *ideas.* Dispositions of the brain may be retained, but ideas are not. Ideas are capable of being *reproduced,* and when we have said that we have said all that is necessary. The soul possesses no special "**conservative faculty,**" as **Hamilton** calls it, or "**retentive faculty,**" as **McCosh** calls it. The soul has power to *reproduce* ideas which do not exist anywhere except in itself when it reproduces them. The speculations about retention are the first crude gropings of thought after the explanation of the mystery which the poet has so beautifully expressed in this passage :

"Who shall say,
Whence are those thoughts, and whither tends their way;
The sudden images of vanished things
That o'er the spirit flash, we know not why?
Tones from some broken harp's deserted strings—
Warm sunset hues of summers long gone by—
A rippling wave—the dashing of an oar—
A flower-scent floating past our parent's door—
A word—scarce noted in its hour, perchance,
Yet back returning with a plaintive tone—
A smile—a sunny or a mournful glance
Full of sweet meanings, now from this world flown;
Are not these mysteries, when to life they start,
And press vain tears in gushes from the heart?"

In treating of Phantasy, we have spoken of "**images,**" in order to convey definite impressions. This word is borrowed from the visual sense and usually suggests it. But **we can reproduce ideas of all our past experiences,** whether capable of reduction to the form of an image or not.

"Music, when soft voices die,
Vibrates in the memory;
Odors, when sweet violets sicken,
Live within the sense they quicken,"—

is a poetical presentation of this truth. It is not quite scientific. The mind cannot really revive an odor, but the idea of an odor.

That a psychical reaction can reinstate some of the physical conditions, we have already seen ; still the reproduction is ideal, not real. "Odors" do, indeed, "live within the sense they quicken" for some time, but finally wholly die away, and no idealist can convince himself that his idea of violets is able to overpower and destroy the realistic odors in his nostrils which he finds disgusting. We do not, really and physically, reproduce sensations, but *ideas* of sensations, that is, states of soul, not peripheral excitations of the organism. The idea of a sensation bears some relation to the sensation which it represents, else it would not be an idea of it, but it differs greatly from the sensation itself. Happily, our most painful sensations, like those of a terrible tooth-ache, pass away so that the idea of our past sufferings still serves to warn us of what is painful without keeping us in constant agony. We can reproduce more vivid ideas of our pleasurable than of our painful sensations. A reason for this is that, as we shall see in another connection, painful sensation involves an injury to the organism and pleasurable sensation is a normal stimulation augmenting development, so that a sound organism cannot so easily reproduce abnormal as normal conditions.

9. The Relation of Phantasy to Education.

Phantasy has a twofold interest to the educator (1) because of its aid to other powers, and (2) because it is itself capable of training.

(1) **Phantasy as an aid to other powers.**—The continuity and progress of intellectual life depend entirely upon the reproduction of ideas. If we lived in present perceptions only, Memory, Imagination, and all the Elaborative Powers would be without materials. Even in the study of the physical sciences, which seem the most objective and presentative of all the sciences, reproduction of ideas is necessary for those comparisons and classifications without which a science cannot exist. No science consists of a mere accumulation of facts, but of facts organized by the mind into a system of truth. More than half of any

science is a mental contribution. Phantasy is not less necessary for the orator and writer than for the man of science. They require in the hearer or reader a store of representative ideas so associated with words that language has the power to revive the images of things in the mind, as materials of persuasion, conviction, or entertainment. The young take great delight in the simplest tale, if it be full of concrete, graphic and image-awakening words. At every period of life there is a semi-sensuous pleasure in effective word-painting, which is nothing else than the awakening of Phantasy to activity through the power of language. Whoever possesses a mastery of this art invests his speech with a charm that redoubles the force of abstract thinking.

(2) **The Training of Phantasy.**—Phantasy serves the highest purpose when it most accurately reproduces ideas of past experiences. It has its natural limitations and we resort to such aids as pictures, charts, diagrams, and figures of speech, especially metaphor and simile, to assist us in reproducing past impressions in the form of images. A text-book is a collection of such helps to give us in brief space the substance of a science. A book on Geography is not like the earth's surface, but it describes and, in a sense, represents to the learner the earth's surface. Dependence upon diagrams and collocations of words on a page that may be "held in the eye," serves us temporarily in passing an examination, but leaves us afterwards with no residuum of solid knowledge. It constitutes what is known among teachers as "**cram.**" It should be discouraged in every form, though it has been defended by the short-sighted as stimulating the mind to rapid acquisition and so energizing the faculties. To be useful in

the service of the higher faculties, Phantasy must be trained to the accurate representation of things *as they are*. This requires deliberate and patient attention to details and to the real objects about which we study. After this, charts, diagrams, summaries and other abbreviated forms of representation are valuable in condensing and systematizing what we have learned in detail. The method of reciting from a page of text "photographed in the eye," is as pernicious as any method can be. It is a substitution of mere images for connected thoughts.

"Phantasy" is the original form of the word "**fancy,**" which the Elizabethan dramatist, **Ben Jonson,** spells "*phantsie*" in his line,

"Break, *Phantsie*, from thy cave of cloud."

The ancient sense of the word justifies the use of it to designate the power of reproducing ideas. **Lord Monboddo** (1714–1779) says: "How various soever the pictures of *fancy*, the materials, according to some, are all derived from sense; so that the maxim,—*Nihil est in intellectu nisi prius fuerit in sensu*,—*There is nothing in the intellect which had not been previously in the sense*,—though not true of the intellect, holds with regard to the *phantasy*." [13] **Dugald Stewart** thus distinguishes between **Imagination and Fancy**: "The office of *fancy* is to collect materials for the *imagination;* and, therefore, the latter power presupposes the former, while the former does not necessarily suppose the latter. A man whose habits of association present to him, for illustrating or embellishing a subject, a number of resembling or analogous ideas, we call a man of *fancy;* but for an effort of *imagination*, various other powers are necessary, particularly the powers of taste and judgment; without which we can hope to produce nothing that will be a source of pleasure to others. It is the power of fancy which supplies the poet with metaphorical language, and with all the analogies which are the foundation of his allusions; but it is the power of imagination that creates the complex scenes he describes and the fictitious characters he delineates. To fancy we apply the epithets of rich or luxuriant; to imagination,

those of beautiful or sublime."[14] Literary critics distinguish between a "**work of fancy**" and a "**work of imagination.**" The ground of discrimination between the "fanciful" and the "imaginative" in literature is excellently described in the following passage by the poet **Wordsworth**: "Fancy does not require that the materials which she makes use of should be susceptible of change in their constitution from her touch; and, where they admit of modification, it is enough for her purpose if they be slight, limited and evanescent. Directly the reverse of these are the desires and demands of the imagination. She recoils from everything but the plastic, the pliant and the indefinite."[15] We shall resume the distinction between Fancy and Imagination in our treatment of the latter power, in Section IV of this chapter.

In this section, on Phantasy, we have considered:—

1. ***Definition and Nature of Phantasy.***
2. ***The Representative Idea.***
3. ***The modes of Reproducing Images.***
4. ***Hallucination.***
5. ***Unconscious Mental Modifications.***
6. ***Unconscious Cerebration.***
7. ***Dreams and Reverie.***
8. ***The Operation of Phantasy.***
9. ***The Relation of Phantasy to Education.***

REFERENCES: (1) Clarke's *Visions*, p. 212. (2) De Quincey's *Confessions*, p. 109. (3) Galton's *Inquiry into Human Faculty*, pp. 84, 86. (4) Lewes' *Problems of Life and Mind*, Third Series, pp. 55, 56. (5) Goethe's *Autobiography*, p. 65. (6) Lewes' *Problems*, p. 455. (7) *Id.*, p. 456. (8) Sully's *Illusions*, pp. 116, 117. (9) Hamilton's *Lectures on Metaphysics*, p. 236. (10) Bascom's *Science of Mind*, pp. 34, 35. (11) Carpenter's *Mental Physiology*, p. 514 et seq. (12) Bascom's *Science of Mind*, p. 398. (13) Monboddo's *Ancient Metaphysics*, Book II., Chapter 7. (14) Stewart's *Elements of the Philosophy of the Human Mind*, Chapter 5. (15) Wordsworth's *Preface to his Works.*

SECTION III.

MEMORY.

1. Definition of Memory.

Memory is the soul's power to recognize objects and ideas, or to know them again as having once been known. It presupposes Perception and Phantasy. We may perceive objects and reproduce ideas known by us in the past either with or without recognition. It adds greatly to the clearness of psychological analysis to consider Memory as the power of *recognition alone*, instead of regarding it as including conservative, reproductive, and recognitive functions, as most psychologists do.

All the older writers offer an **imperfect analysis of representative knowledge,** attributing to Memory a great variety of functions. Even **Sully,** from whom we should expect careful analysis, treats of the phenomena of Phantasy and Memory together, with little discrimination, under the awkward title, "Reproductive Imagination (Memory)," and says, "What is commonly understood by Memory, that is to say the recalling of *particular* impressions and pieces of knowledge (as distinguished from the retention of general truths) thus falls under the head of reproductive imagination."[1] **Dewey,** who more clearly defines Memory as "knowledge of particular things once present, but no longer so," fails to attain perfect clearness, (1) because Memory may act upon something that is *actually present*, as when I recognize to-day the man I met yesterday; (2) because there may be "knowledge of particular things or events once present, but no longer so," *without* Memory, as when I have in consciousness the images of past objects and events revived by Phantasy and distinguish and reflect upon them, without *recognizing* them as ever having been known by me before. His definition applies as well to reverie as it does to Memory. The true distinction he admits without embracing it in his definition, when he says:

"The association of ideas only accounts for the *presence* of the object or event. The other half is the reference of its present image to some past reality. In *memory* we *re-cognize* its presence; *i. e.*, we know that it has been a previous element of our experience. We place the image in the train of our *past* experiences, we give it some *temporal* relation; we refer it to some real object once perceived." [2] This is precisely the function of Memory.

2. Perfect and Imperfect Memory.

There are perfect and imperfect acts of Memory. A perfect act of Memory would involve a reference of an object or an idea to its original grouping, that is, a recognition of the time and place *when* and *where* the object or idea was known before. Most of our acts of Memory are imperfect; that is, we know many objects and ideas as having been known before without being able to assign to them their precise times and places. For example, I meet a man on the street to-day and recognize his face as one that I have seen before. If I can tell when and where, I have two elements of knowledge in addition to the recognition of the face. An absolutely perfect act of Memory would involve the complete reinstatement of the psychical conditions that attended the organization of the item of knowledge at the time when it was first known.

The German phrenologist, **F. J. Gall** (1758–1828), went so far as to assign to each faculty its own memory, and he has been followed in this by most modern physiological psychologists who treat Memory as an attribute of the organism, assigning a memory to every part and organ of the body, as the "memory of the hand" in playing an instrument, because the hand seems to recall and repeat its previous motions without conscious direction. This is a result that might naturally be expected from the traditional mode of treating Memory as a *reproducing* power. The moment we think of it only as a *recognizing* power, or power to know what has been known

before, it is lifted out of this mere mechanical order and it is evident that it can belong only to a *conscious* being, capable of knowing and of knowing itself as having known. Nothing like this can be predicated of the hand, or the ear, or the eye, or any other bodily organ. When we speak of the musician's "memory of the ear" or the artist's "memory of the eye," we are using figurative language, poetical rather than scientific expressions. Many of these special powers depend upon a vivid Phantasy. That there are different degrees of ability to reproduce ideas of different orders, there can be no doubt, one being able to reproduce visual and another auditory ideas better than others. Thus Mozart could write out the *Miserere* from hearing it twice in the Sistine Chapel, and Vernet could paint pictures from recalled impressions. The French psychologist, **H. A. Taine** (1828–), has given numerous examples of special memories, which he very ingeniously tries to explain on a physiological basis.[3]

3. Memory of Time.

The element of time is essential to every act of Memory. We recognize only what we have known before, that is, at *some* period of past time. As we have seen, an act of Memory does not necessarily involve the knowledge of the *definite* time when an object or idea was previously known, but this is necessary in perfect acts of Memory. In order, then, that any act of Memory should occur, the conscious self must know itself as *having been,* as well as *being.* It must also distinguish itself from the successive events, or conscious states, of the past. The conception of the soul as "a series of sensations" renders any theory of Memory impossible. There are two aspects of time that have to be considered in giving definiteness to the time-element in Memory, (1) *succession*, or the order in which past knowledge has arisen, and (2) *duration*, or the continuance of an experience. Let us examine them separately.

(1) **Succession.**—We can assign to items of past knowledge a position in an order of succession. How are we able to do this? We might conceivably do it by reproducing every element in our entire past experience. We evidently do not repeat our whole experience. We do, however, reproduce ideally certain portions of our past experience and assign to a given item of knowledge its position in that ideal order. Thus, if I wish to know *when* I saw the man whose face I recognize to-day, I try to reproduce the ideas associated with this face until I come upon an order of ideas with which I can connect the remembered face. I then locate my previous perception of it in that ideal order. In this I clearly distinguish *self* from the order of ideas and exemplify in self a *relating activity* that is not found in the spontaneous operation of Phantasy.

(2) **Duration.**—We are able to know past experiences as having occupied a certain duration. Waiting for a train, we have, when the train arrives, some estimate of the "length of time" during which we have been waiting. This estimate is, however, wholly relative and seems "long" or "short" according to circumstances. Time passes quickly when we are much interested, slowly when we have nothing to do but wait and expect. This seems to depend upon the extent to which the attention dwells on the time-relation. When we are occupied with objects and ideas, we take little note of time; when we have nothing else to do, we concentrate attention upon the passing moments and thus time seems "longer." The knowledge of duration implies *self-duration*, or the permanence of self during the states of consciousness that succeed one another.

Something has been done toward determining the **amount of time required for acts of Memory**, including as inseparable the act of reproduction and the act of recognition. The results so far are not very satisfactory; if, indeed, the conditions of the problem admit of their ever being entirely so. Those who are interested will find the following references useful: Ribot's "German Psychology of To-day," pp. 272, 274; Galton's "Inquiry into Human Faculty," pp. 185, 202; and an article by an American psychologist, **G. Stanley Hall** (1845–), in "Mind" for January, 1886. For "rhythm" in our knowledge of Time, see Dewey's "Psychology," pp. 185, 187.

4. Voluntary and Involuntary Memory.

We distinguish between **recollection** and **remembrance.** The difference is that recollection is voluntary, remembrance is involuntary. I am sometimes able to "recollect" when I do not "remember." Recollection is, however, something more than an act of Memory. It is a voluntary act of reproduction followed by an act of recognition. For example, I wish to recall the name of a man whom I have met but whose name I do not at the moment remember. I cannot directly reproduce it by an act of Will, for I do not know what it is. I fix the attention upon that which I suppose to be closely associated with what I am seeking,—the appearance of the man, the place where I met him, the person who introduced him, or whatever else is already in consciousness and is the ground of my wanting the name. The reproductive power is thus energized and in the course of its operation the name occurs to consciousness and is recognized. That the reproductive and the recognitive processes are distinct, is evident from the fact that we finally select out of several possible names suggested by Phantasy one which we recognize as the one sought for. Sometimes the power to reproduce the name

is wanting, and then we are unable to recollect. We may, however, remember it at some other time when the name is spontaneously or accidentally reproduced. We are often compelled to wait for the spontaneous action of the reproductive power.

5. Amnesia, or Loss of Memory.

Amnesia (from the Greek *a, alpha,* implying deprivation, and *μνῆσις, mnēsis,* remembrance), or loss of Memory, is a common phenomenon. It is sometimes total, sometimes partial, and both the total and partial losses are sometimes temporary and sometimes permanent. All forms are also sometimes sudden and sometimes progressive. The principal ascertained causes of amnesia are the following:

(1) **Wounds or diseases affecting the brain.**—Amnesia from these causes is generally sudden, unless the disease itself is progressive, in which case the amnesia may be progressive also, but it is frequently temporary and sometimes only partial.

"The Memory of **particular classes of ideas** is frequently destroyed; that, for example, of a certain language or some other branch of knowledge, or of the patient's domestic or social relations. Thus, a case was recorded by Dr. Beattie, of a gentleman who after a blow on the head, found that he had lost his knowledge of Greek, but did not appear to have suffered in any other way. A similar case is that of a lad who lay for three days insensible in consequence of a severe blow on the head and found himself on recovering to have lost all the music he had learned, though nothing else had been thus 'knocked out of him.' . . . . One of the most curious examples of this limited loss of Memory occurred in the case of Sir Walter Scott, who having produced one of his best works under the pressure of severe illness was afterwards found to have forgotten

entirely what he had thus constructed."[4] **Aphasia, agraphia,** etc., are frequent forms of amnesia, in which spoken or written words are forgotten. A great number and variety of examples may be found in Ribot's "Diseases of Memory." In all these cases, there is, no doubt, injury to the nervous apparatus employed in reproducing the images of Phantasy, so that a total or partial, a temporary or permanent loss of function is produced. The now classical case, quoted from Coleridge by Hamilton, of the servant-girl who suddenly found herself in possession of learned languages, illustrates how sickness may restore as well as destroy the Memory of past impressions.[5]

(2) **Intoxicants and anæsthetics,** in such doses as to interrupt the use of the reproductive powers, produce amnesia by producing a suspension of consciousness. The degree of amnesia from this cause is variable, but unless the dose is fatal, the loss of Memory is not permanent.

Alcohol, opium, and other substances of like character, which are stimulants in small doses and narcotics in large doses, have the effect finally of lowering the tone of the whole nervous system, and so of inducing weakness in all the processes connected with it. **Permanent deterioration of Memory is, therefore, likely to follow from the use of such substances,** although the recovery from the stupefaction of a single debauch may seem complete. The effect of stimulants in undermining the psychical life is evident in cases of *delirium tremens*, in which the diseased centres of perception are stirred to the most extravagant vagaries in suggesting non-existent images.

(3) **Excessive weariness** is a frequent cause of temporary amnesia. Almost every one has experienced to some extent the influence of exhaustion upon the suspension of Memory.

Sir Henry Holland tells us: "I descended on the same day two very deep mines in the Hartz Mountains, remaining some hours

under ground in each. While in the second mine, and exhausted both from fatigue and inanition, I felt the utter impossibility of talking longer with the German Inspector who accompanied me. Every German word and phrase deserted my recollection; and it was not until I had taken food and wine and been some time at rest that I regained them."[6]

(4) **Old age** is usually attended with progressive amnesia. It is a noticeable fact, however, that the aged retain a perfect recollection of the events of their early lives, while the occurrences of the day fade from Memory in a very short time.

Carpenter attempts to explain this by reference to the superior energy of the vital forces in the brain in youth and their decay with advancing years. "As the nutritive activity diminishes, the waste becomes more active than the renovation; and it would seem that while (to use a commercial analogy) the 'old-established houses' keep their ground, those later firms whose basis is less secure, are the first to crumble away,—the nutritive activity, which yet suffices to maintain the original structure, not being capable of keeping the subsequent additions in working order."[7] The ready facility with which the "commercial analogy" fits in, though the subject-matter is so remote, suggests the fascination and the danger of all mere analogy, such as that upon which this explanation is built. Still, the theory serves to explain the disposition of a centre to reproduce states to which it has been accustomed, and does really help us to understand why the images of youth should be more easily reproduced in the mind of an aged man than the images of yesterday. Another and important element is diminishing attention in later years.

6. Relation of Memory to the Organism.

That Memory is dependent to some extent upon the condition of the nervous organism, is evident from the facts already observed. If Phantasy fails to reproduce ideas of the past, Memory must fail to recognize them.

It has already been pointed out that Phantasy employs the nervous organism in reproducing images and yet without being wholly identified with the organic processes. The act of *recognition,* however, is a purely intellectual act, and the only dependence of Memory upon the organism is involved in its dependence upon subsidiary operations of Phantasy.

Ladd repudiates all physiological explanations of Memory. "None of these physical conditions immediately concerns the very mental activity which constitutes the essence of conscious memory. What is explained, if any thing, is simply why I remember one thing rather than another—*granting the mind's power to remember at all.* This power is a spiritual activity wholly *sui generis,* and incapable of being conceived of as flowing out of any physical condition or mode of energy whatever. . . . We must insist upon the complete inability of physiology to suggest an explanation for *conscious* memory, in so far as it is *Memory*—that is, in so far as it most imperatively calls for explanation." [8]

7. Relation of Memory to Other Powers.

The dependence of all the higher powers of Intellect upon Memory hardly requires illustration. Our immediate knowledge is confined to a very narrow circle of facts, and does not afford us a very extended illustration of general principles. It is through our recognition of past knowledge that we are able to interpret and understand even the little which the present furnishes. It is through acts of Memory that we are able to detect those resemblances upon which all our generalizations are built. Through the aid of Memory we exercise that function of Assimilation which broadens and deepens the knowledge acquired through the function of Discrimination. It enables us to interpret the present in the light of the past.

It has frequently been affirmed that men of remarkable Memory are weak in other intellectual powers. Hamilton has denied and refuted this error, citing numerous examples in support of the position that **a good Memory is necessary to intellectual greatness.** Of Scaliger it was said, "He had read nothing (and what had he not read?) which he could not perfectly remember." Grotius and Pascal never forgot any thing they had ever read or thought. Leibnitz and Euler, both great mathematicians and men of the most original minds, could repeat the whole of the "Æneid." A. von Humboldt and Ritter, the geographer, possessed vast accumulations of concrete facts with great powers of thought. Niebuhr in history and statistics, Goethe in literature and art, and Agassiz in natural history, were men of remarkable Memory and distinguished general powers.

8. Relation of Memory to Education.

It is evident that all the processes of education are dependent upon Memory, for what we cannot recollect we cannot use for any intellectual purpose. How can the teacher develop the power of Memory in the learner? (1) By directing his acquisition with reference to recognition, and (2) by exercising him in the prompt and accurate recollection of what he has learned.

(1) **Acquisition with reference to Recognition.**—Our ability to recall knowledge in the future depends largely upon the *circumstances* of its acquisition. Such physical conditions as general good health and vigor of brain are conducive to permanent acquisitions, while disease and weakness are obstructive. Psychical conditions, such as interest in the subject and attention to details, also affect the durability of knowledge. There is, moreover, the essential condition of sufficient time for distinct impressions to be made and for a certain amount of repetition. But when the conditions are all as favorable as possible,

much depends upon the *method* of acquisition. There is a natural method and there is an artificial method. The natural method consists in **annealing the new knowledge to the old by a process of assimilation,** thus organizing it as a part of the mental life. The artificial method consists in holding the new knowledge *by itself,* as something irrelevant to the integrity of the mental life, by some superficial or transient tie of association, such as the appearance of a sentence on a page. A student of Geometry will sometimes recite a demonstration word for word as it appears in the book, reproducing the figure also, with the page before his mind's eye, and in a week will have no recollection of either demonstration or figure. The natural method would require such an apprehension of the theorem and proof that the learner could use other language and a different figure in the demonstration. The new knowledge would then be forced to enter into composition with previous knowledge and be a permanent acquisition. The real object in teaching Geometry is to implant in the mind (in addition to the discipline in reasoning) a mathematical truth, not simply a string of words and a figure with particular letters. One cannot be justly expected to remember what he has never learned, and yet teachers sometimes hold students responsible for what they were never taught to learn. If the words of the book satisfy the teacher, the learner naturally infers that it is these alone which he is to acquire. Accordingly, he learns and forgets them in the same week, and what he should have acquired he has never learned.

(2) **Practice in Recollection.**—When the learner has acquired knowledge in the proper manner, the teacher may aid him by calling into exercise his power of recol-

lection. The student must *recite* what he has learned, that is, give an account of his acquisition. However urgent reluctant learners may be in advocating other plans, no method of instruction can ever supersede the method of recitation, without intellectual loss. **The act of recollection itself helps to fix knowledge and prepare it for future use,** and until it is so prepared it is practically valueless, even if it can be said to have existence. The worst conceivable teacher, from an intellectual point of view, is one who does all the reciting, or a great part of it. A better service is to show the student how to recollect what he has studied by drawing out his knowledge, kindly but inexorably, along the lines of association which he ought to have established. If this process is a revelation of ignorance, it is certain that the learner has been either incapable or neglectful of the task assigned him.

Mnemonic inventions, or systems of artificial memory, have been numerous and often ingenious. The earliest known is that of the Greek poet Simonides, who lived in the fifth century before Christ. Every subsequent age has been prolific in them. Some of them are the devices of charlatans to obtain money from the unsophisticated. They usually consist in a system of associations by which dates, names, etc., may be recalled. For example, every number may be denoted by a consonant, let us say, $1 = b$, $8 = c$ or k, and $7 = d$. Now by filling in with non-significant vowels, we may make a word, say *becked*, which ought to stand for 1887. In this manner, whole lists of dates may be learned by recalling *words*, instead of dates, which is supposed to be easier for some people. Sometimes mnemonic rhymes are employed and other contrivances of a similar nature. Usually more time and mental effort are employed in the childish occupation of forming artificial associations than would be required to learn the fact outright. Occasionally, however, there is real convenience, as in the familiar rhyme noting the number of days in the different months of the year, beginning, "Thirty days hath September," etc.

In this section, on "Memory," we have considered:—

1. ***Definition of Memory.***
2. ***Perfect and Imperfect Memory.***
3. ***Memory of Time.***
4. ***Voluntary and Involuntary Memory.***
5. ***Amnesia, or Loss of Memory.***
6. ***Relation of Memory to the Organism.***
7. ***Relation of Memory to Other Powers.***
8. ***Relation of Memory to Education.***

REFERENCES: (1) Sully's *Outlines of Psychology*, p. 223. (2) Dewey's *Psychology*, p. 179. (3) Taine *On Intelligence*, Part I., Book II., Chap. I. (4) Carpenter's *Mental Physiology*, pp. 443, 444. (5) Hamilton's *Lectures on Metaphysics*, pp. 239, 240; quoted from Coleridge's *Biographia Literaria*, I., p. 117; and cited by Carpenter, *Mental Physiology*, pp. 437, 438. (6) Carpenter's *Mental Physiology*, p. 441. (7) *Id.*, p. 442. (8) Ladd's *Physiological Psychology*, p. 556.

SECTION IV.

IMAGINATION.

1. Definition of Imagination.

Imagination is the soul's power to recombine representative ideas. The mere *reproduction* of ideas is the function of Phantasy, as we have defined it. *Recognition* is the function of Memory. But in addition to the revival and remembrance of past experiences, we have the power to take the individual elements thus reinstated in consciousness and *combine them into new forms.* This, and not the mere imaging of ideas, is the proper sphere of Imagination.

The word "Imagination" has been variously defined and employed by writers on Psychology, and, following these, we should find ourselves in the utmost confusion. Let us turn, then, for a description of the power, to those who have been conspicuous in the possession and use of it. **Wordsworth** says: "*Imagination*, in the sense of the poet, has no reference to images that are merely a faithful copy, existing in the mind, of absent external objects; but is a word of higher import, denoting operations of the mind upon these objects and processes of creation or composition governed by fixed laws."[1] **Shakespeare** has the same idea of Imagination:

> "And as *Imagination* bodies forth
> The form of things unknown, the poet's pen
> Turns them to shapes, and gives to airy nothing
> A local habitation and a name."

Washington Irving observes: "It is the divine attribute of the *Imagination* that it is irrepressible, unconfinable; that, when the real world is shut out, it can create a world for itself, and with a necromantic power can conjure up glorious shapes and forms and brilliant visions, to make solitude populous and irradiate the gloom of the dungeon."[2]

2. The Creative Energy of Imagination.

An act of Imagination may be (1) **Associative,** as when one, having reproduced by Phantasy the ideas of a man and a horse, takes the horse's head and places it upon the man's shoulders, or regards them as twice, or half, the original size; (2) **Penetrative,** as when one seeks out that element in an object which constitutes its heart and life and treats the ideas connected with it from this central starting-point; or (3) **Contemplative,** as when one regards an object or idea in a peculiar manner and is by this led to employ other images and ideas in connection with it in conformity to this manner of regarding it. In all these forms of imaginative activity, *creative energy,* in varying degrees, is exercised. "To imagine, in this high

sense of the word, is to realize **the ideal**, to make intelligible truths descend into the forms of visible nature, to represent the invisible by the visible, the infinite by the finite."[3]

This division of the activities of Imagination is taken from **John Ruskin** (1819–), the English art critic and writer, whose views of the subject, involving many of the ideas previously enunciated by the English poet **Leigh Hunt**, in his essay on "Imagination and Fancy," are the most suggestive to be found in the English language. The student should read the whole of Section II., in the second volume of "Modern Painters," where the distinctions between Imagination Associative, Penetrative and Contemplative, are fully illustrated. For the benefit of those to whom the work may be inaccessible, the following is transcribed, descriptive of **the mode in which the highest imaginative activity seizes its materials**: "It never stops at crusts or ashes, or outward images of any kind, it ploughs them all aside and plunges into the very central fiery heart, nothing else will content its spirituality. Whatever semblances and various outward shows and phases its subject may possess, go for nothing, it gets within all fence, cuts down to the root, and drinks the very vital sap of that it deals with: once there, it is at liberty to throw up what new shoots it will, so always that the true juice and sap be in them, and to prune and twist them at its pleasure and bring them to fairer fruit than grew on the old tree; but all this pruning and twisting is work that it likes not and often does ill; its function and gift are the getting at the root, its nature and dignity depend on its holding things always by the heart. Take its hand from off the beating of that, and it will prophesy no longer; it looks not in the eyes, it judges not by the voice, it describes not by the outward features; all that it affirms, judges or describes, it affirms from within."[4]

This prepares us for the following **distinction between Imagination and Fancy**, so finely illustrated at length: "The entirely unimaginative mind *sees* nothing of the object it has to dwell upon or describe and is, therefore, utterly unable, as it is blind itself, to set any thing before the eyes of the reader. The Fancy sees the *outside*, and is able to give a portrait of the outside, clear, brilliant and full

of detail. The Imagination sees the *heart and inner nature* and makes them felt, but is often obscure, mysterious and interrupted in its giving of outer detail. Take an instance. A writer with neither Imagination nor Fancy, describing a fair lip, does not see it, but thinks about it and about what is said of it, and calls it 'well turned,' or 'rosy,' or 'delicate,' or 'lovely,' or afflicts us with some other quenching and chilling epithet. Now hear Fancy speak,—

> 'Her lips were red, and one was thin,
> Compared with that was next her chin,
> Some bee had stung it newly.'

The real, red, bright being of the lip is there in a moment. But it is all outside ; no expression yet, no mind. Let us go a step farther with Warner, of fair Rosamond struck by Eleanor.

> 'With that she dashed her on the lips
> So dyéd double red ;
> Hard was the heart that gave the blow,
> Soft were those lips that bled.'

The tenderness of mind begins to mingle with the outside color, the Imagination is seen in its awakening. Next Shelley,—

> 'Lamp of life, thy lips are burning
> Through the veil that seems to hide them,
> As the radiant lines of morning
> Through thin clouds, ere they divide them.'

There dawns the entire soul in that morning ; yet we may stop, if we choose, at the image still external, at the crimson clouds. The Imagination is contemplative rather than penetrative. Last, hear Hamlet,—

> 'Here hung those lips that I have kissed, I know not how oft. Where be your gibes now, your gambols, your songs, your flashes of merriment that were wont to set the table on a roar ?'

There is the essence of lip and the full power of the Imagination."[5]

It will be useful to the learner who would apply these distinctions in **literary criticism,** to add the following lines from Milton, in which the psychical activity employed in each line is marked at the end :

"Bring the rathe primrose, that forsaken dies, (Imagination)
The tufted crow-toe and pale jessamine, (Negatory)
The white pink and the pansy freaked with jet, (Fancy)
The glowing violet, (Imagination)
The musk rose and the well-attired woodbine, (Fancy, vulgar)
With cowslips wan, that hang the pensive head, (Imagination)
And every flower that sad embroidery wears." (Mixed) [6]

3. The Character of Imaginative Activity.

Imaginative activity is purely psychical. It admits of no physiological explanation. It is not simple *fusion* of ideas, it is creative. Mix two colors, and you have a third color; but you have destroyed the other two in the production of the third. In imaginative activity, we do not thus destroy the primary ideas of Phantasy which we employ in our recombinations. Here all physical analogy fails. The lower animals have Phantasy, but not Imagination, as we have employed the term. They create or invent nothing. Hence, they are stationary, and a dog of the nineteenth century is like a dog of the first. Man alone possesses this higher power, which is the constructor of his arts, his sciences, his literatures, and his philosophies.

Lotze has well illustrated this truth in the following passage: "We know that if the idea of 'blue,' and at the same time that of 'red,' originates within us, the two by no means mingle and produce 'violet.' Were this, however, to happen, then a third simple idea would merely have taken the place of the two others, and a comparison of these two would have been made impossible by their vanishing. Every comparison, and in general every relation between two elements (in this case, 'red' and 'blue'), presupposes that both points of relation remain separate, and that an **ideating activity** passes over from the one, **a**, to the other, **b**, and at the same time becomes conscious of that alteration which it has experienced in this transition from the act of forming the idea of **a** to that of forming **b**." [7]

This truly creative process of Imagination is passed over in silence

by physiological psychologists, and their reticence seems to justify the acute remark of Ruskin, that those "who are constantly endeavoring to fathom and explain the essence of the faculties of mind, are sure in the end to lose sight of all that cannot be explained." The only explanation of imaginative activity, in its higher forms, is a reference of it to a mode of being quite different from the functions of matter and motion. The reality of such a being is intellectually as acceptable and experimentally as certain as the existence of the *ether* mentally required as a ground of explanation of the phenomena of light. The belief in this hyper-organic reality is as little metaphysical as the physicist's belief in luminiferous ether, and, indeed, is more clearly demonstrable.

4. The Limitations of Imagination.

It is evident that the products of Imagination can contain no elements not originally furnished by presentation and reproduced by Phantasy. All the creations of art, therefore, however complex or admirable they may be, are only new combinations of old presentations modified by Imagination in their recombination. They have nothing new but their relations. These, however, are exceedingly varied, so that effects are produced which are entirely new. But even these relations are limited by certain laws of combination, for some forms of composition are rendered impossible by the nature of things and others by the requirements of taste. The various spheres of imaginative production are thus governed by inflexible laws, which constitute the principles of the arts.

"**No human mind has ever conceived a new animal.** For it is evident that in an animal every part implies all the rest; that is, the form of the eye involves the form of the brow and nose, these the form of the forehead and lip, these of the head and chin, and so on, so that it is physically impossible to conceive of any one of these members, unless we conceive the relation it bears to the whole ani-

mal; and as this relation is necessary, certain and complicated, allowing of no license or inaccuracy, the Intellect utterly fails under the load, and is reduced to mere composition, putting the bird's wing on men's shoulders, or half the human body to half the horse's, in doing which there is no action of Imagination, but only of Fancy; though in the treatment and contemplation of the compound form there may be much Imagination."[8] We may at once think of the *centaur*, a man's body on a horse's shoulders, as a product of Imagination frequently employed in ancient poetry and even represented in sculpture. That there is no *real* Imagination here is evident from this: such a composite has *two* digestive and arterial systems, violating all organic analogies. The centaur is, then, a work of Fancy, not of Imagination. The first designer of this monstrosity laid two images side by side, he did not grasp the *idea* of an animal and give that idea embodiment. Accordingly, we have the *grotesque*, something unnatural and incongruous, fit to amuse children, not broadly and universally human in design. In literature, Münchausen's Tales are fanciful, rather than imaginative; they amuse but do not satisfy. All high art aims at the *ideal*, which Imagination alone, not Fancy, can realize.

5. Varieties of Imagination.

Imagination, in its true sense, has one main end, the pursuit of the ideal. It may, however, be applied to ends in a great variety of spheres. Without regarding the classification as exhaustive, but simply as illustrative, we may mention the following leading varieties:

(1) **Scientific Imagination** is that form of imaginative activity in which the end is to realize more completely the true relations of things, under the guidance of Intellect. This appears as (*a*) **Mathematical** Imagination, when the aim is to realize the relations of space and number; (*b*) **Mechanical** Imagination, when the aim is to realize combinations of natural forces for the accomplishment of some practical end; and (*c*) **Philosophical** Imagination,

when the aim is to realize the relations of cause and effect in the order of actual existence.

Science in every form is much more than accumulated facts. It is the truth with regard to its subject-matter, and this involves a knowledge of the connection, significance, and laws of facts. It may seem at first thought that no department of knowledge is less indebted to Imagination or less connected with its exercise than **Mathematics.** Reflection, however, shows that it is quite otherwise. The mathematician deals with units of number and magnitude represented by symbols, but signifying realities. The geometer, for example, deals with lines, surfaces, and solids whose actual and universal relations are to be demonstrated. If the student will attempt the demonstration of a geometrical theorem without any physical figure, depending entirely upon the contents of his mind, he will realize the relation of Imagination to mathematics. Some teachers have insisted upon this mode of demonstration as a means of discipline to Imagination. A few exercises in Inventional Geometry, pursued on this plan, will illustrate the value of a powerful Imagination to the geometer.

The importance of Imagination to the **inventor** hardly requires discussion. To construct such a complex mechanism as a locomotive engine, demands Imagination not less than to paint a picture. Not only its parts, but their connections and inter-relations, must be distinctly apprehended. The locomotive was an idea in the mind of George Stephenson, and every element of it was evolved through a process of Imagination, before the first actual locomotive appeared before the eyes of men. So also the steam-boat existed in the mind of Robert Fulton and the telephone in that of Thomas A. Edison as inventions of Imagination destined to revolutionize the life of society.

Philosophical Imagination searches after causes, striving to explain phenomena. The operation of Imagination in the savage is very rudimentary, and so we must suppose it to have been in primæval man. A storm-cloud gathers ; lightning flashes; thunder rolls ; the rain pours out upon the earth. The observing savage wishes to know the cause of these phenomena. The untutored Hindu imagines that the elephant of Indra is concealed in the clouds and throws down water gathered from the sea with his trunk. When observation has

become more definite, it is noticed that vapor rises from the surface of water. It is observed that this occurs especially when heat is present. Then, the resemblance between the vaporization of water and the formation of clouds is detected. Finally, the true connection of phenomena is disclosed and clouds are imagined as the products of the sun's action upon the ocean, drawing up moisture in a vaporized form, which falls when it is condensed. In like manner the Greek speaks of the lightning as the fiery bolt of Zeus. The electrical phenomena are much more difficult to bring into imaginative connection with ordinary events than those of evaporation. Long after Zeus is dethroned, men continue to think of lightning as a personally caused phenomenon and to connect it with the wrath of a deity. At last, the Imagination of a Franklin connects the phenomena of the thunderstorm with others already known and gathers electricity from the cloud as he would from the back of a cat in the dark. Thus most of the advances in scientific knowledge have been made by leaps of Imagination, afterward verified, and not by the Baconian method of aggregating facts.[9] Every mass of facts is dumb and unintelligible until the light of genius reveals their law. The scientific form of Imagination is akin to the poetic, as is illustrated by the discoveries of the great poet Goethe, who was the first to apply the idea of evolution to the vegetable kingdom in his doctrine of the "metamorphosis of plants," though he has not been followed in his "doctrine of color." Faraday, Tyndall, Darwin, Helmholtz and other great leaders in science, have all been men of great Imagination. The faculty seems to assume a deeper tinge of the poetic tendency in the great system-makers of philosophy, like Plato, Fichte, Schelling and Hegel. While Imagination does not always attain to truth, it boldly soars for it and, even though, like the eagle, it sometimes misses its prey, it dwells in a lofty region.

(2) **Artistic Imagination** is that form of imaginative activity in which the end is to realize such relations as will give pleasure to our æsthetic nature, under the guidance of Sensibility. This appears in the fine arts as (*a*) **Poetical,** (*b*) **Pictorial** and (*c*) **Architectural** Imagination, according as it deals with words as the symbols of ideas, with lines and colors as representing appearances, or with

masses of matter as the constituents of buildings and similar structures. Painting and Sculpture are arts created by Pictorial Imagination, both having for their object the production of a picture; the former in both lines and colors on a flat surface, the latter in lines alone but usually in three dimensions of space. Music is inseparably associated with Poetry, so that both must be considered as products of Poetic Imagination.

The aim of Art is to satisfy feeling rather than to discover truth. There are laws which it cannot violate, because they are laws of Intellect and laws of Nature, and feeling is only one phase of that complex psychical life which includes inseparably the phenomena of knowing and feeling. We cannot *feel* that an object is beautiful when we *know* that it is not. There are not for Art the same infallible tests and standards which are found for knowledge in the laws of thought. Feeling is subjective and personal, not objective and universal, and while knowledge exists for all and may be shared by all, feeling exists for the individual only and is variable according to personal differences. Hence the old aphorism, "*De gustibus non disputandum est*," "There must be no disputing about tastes." The same productions are not equally pleasing to all. The consentient judgment of the majority of the cultivated is, therefore, the only standard and this, from the conditions of the case, must be variable. Artistic greatness consists in producing such creations of art as transcend the provincial and temporary taste and satisfy the best judges in all times and places. If we ask, Who are the best judges? we can only answer, Those who have most culture. If we ask what "culture" is, we cannot do better than to adopt Matthew Arnold's definition, "The knowledge of the best that has been known and thought in the world." If all these ideas seem to move in a circle, as they confessedly do, it is because, as has been explained, this is the very nature of feeling, which is not a form of apprehending truth but of apprehending pleasure. The aim of the artist is to please. Whether or not he succeeds, depends entirely upon his mood and ours.

The essence of poetry is feeling. It may be defined, "Emotive

ideas in emotive language." Emotive ideas are such as stir emotion. Emotive language is such as creates and satisfies emotion. It must be rhythmical, because all emotion moves in rhythm. Pause is unnatural until it is spent and compulsory pause is its annihilation. Hence, meter, rhyme and alliteration are the traits of poetic language. But we are here more concerned with the poetic faculty. This is Imagination. It is moved by feeling and in turn its movements awaken feeling. As the greatest of poets has said,—

> "The lunatic, the lover and the poet
> Are of Imagination all compact."

These are the three representatives of emotion in its three types of excitement: lunacy, love and poesy. Each is moved by ideas rather than objective realities ; the first to the wrong interpretation of his perceptions, the second to the glorification of his idealized entrancer, the third to the creation of ideal beings to meet the needs of his etherialized feelings. Shakespeare has opened the heart of a great poet in disclosing this association of emotive perturbation and imaginative activity. It is through this union of Imagination and feeling that poetry and music are naturally connected. Music is pure rhythm without images. Words set to music suggest the images and both music and poetry reach their climax of perfection in this wedding of ideas to emotions. Hence all the earliest poems were sung or chanted ; hence every novice in reading verse instinctively sings it.

Pictorial power has a wide range. It began with the rude scratching of an animal's outline upon a flat bone of its own body when the feast was over. It is difficult to trace the development of pictorial art by consecutive steps and quite unnecessary here. The perspective of painting is a late discovery and sculpture had advanced far before painting had existence. Form first and color afterward, has been the order of progress. Painting rises out of sculpture and becomes distinct from it when it is seen that relief can be given by the use of lines and the distribution of shades, without actually employing three dimensions. The study of sculpture and painting throws great light upon psychologic history, for the products of pictorial art reveal the prevailing sentiments of every age which they represent. The connection with the religious sentiment is very close and the earliest plastic art was consecrated to the repro-

duction of the gods. The progress from the huge, grotesque aggregation of many heads upon one body in the old Indic divinities to the symmetrical and ideal human figures of the gods of Greece, marks a growth of Intellect, a refinement of Sensibility and a final dominance of Reason.

Architecture is not identical with construction. In so far as it is a fine art, it is controlled by æsthetic feeling rather than by utility. The temples upon which its creative power first exerted itself were shrines built by Imagination as the dwelling-places of Imagination. They were parts of a grand national cultus and every element of construction had relation to the central idea of the divinity whom the Imagination placed in the *cella* of the temple. All the other arts conspired to produce effects upon the worshipper. Sculpture and painting kept the idea of the indwelling deity before the eye, solemn chants conveyed it to the ear, incense wafted it to the nostril. Thus philosophy, which devised the national cultus of the ancient nations, clothed itself with the garment woven by Imagination and dominated through the power of visible forms the life of great peoples. Its doctrines assumed the garb of myths and theogonies and combined with the outward presentations to constitute a vast system accepted as real in the minds of men. All this was the work of no single master, but the spontaneous creation of nations. It illustrates the reality and the potency of the religious sentiment. It illustrates too the power of the sensuous in man to distort and pervert the religious sentiment itself and to substitute for communion of spirit a passion and veneration for form.

(3) **Ethical Imagination** is that form of imaginative activity in which the end is to realize an ideal of character and conduct such as will satisfy the convictions of conscience, under the guidance of Will. It is the essential element in all personal and social advancement in morality and realization of the spiritual ideal.

Everything ethical, or moral, has relation to some end. Some ends are recognized by men as *right*, others as *wrong*. It is possible for us to select pleasure, power, fame, or wealth as the end of life. A little reflection, however, shows that if an individual lives solely

for such a limited and personal end, his life is not what it *ought to be*, is not ideally right. We have the power to imagine the ideal in character and conduct. This is the **ethical ideal.** It is *that which ought to be.* How we reach such ethical ideals and the ground of obligation on which they rest are topics to be discussed in treating the science of right conduct, or Ethics. We have here simply to note the psychological fact that we can form such ideals, and when we come to treat of the ethical emotions, we shall see that we have feelings of obligation to conform practically in our lives to such ideals as these. We are accustomed to speak of books, pictures and other products of the Imagination as "good" or "bad," that is, from a moral as distinguished from an artistic point of view, according as they do or do not conform to moral ideals. A book or picture is not "bad" because it is a work of Imagination, that is, because it is fiction, but because it has an immoral effect upon those who are led to admire it and sometimes, insensibly, when there is no conscious admiration. Some of the best books in the world and nearly all the great pictures are products of Imagination, but of this faculty as pursuing and realizing the deepest truth, for the deepest truth is truth of principle, not of particular fact. In this clearer light, certain works of fiction may be highly valued for their moral power, presenting as they do the ideal rather than the actual excellence of human attainment, and thus stimulating all with a desire to realize the unattained.

6. Expectation.

A practically important application of Imagination is in **expectation,** or the imaginative anticipation of the future. It has sometimes been described as an "inverted memory," a projection of the experiences of the past into the future, with the time-relations inverted. This is very inadequate. We seldom expect the future to be exactly like the past. Nor is expectation a mere spontaneous representation by means of Phantasy. The true analysis is this: Phantasy revives former experiences; Memory recognizes them as belonging to the sphere of reality, not mere images such

as are presented in dreams; Imagination singles out such as are likely to be repeated in the circumstances of the future that will probably exist. Thus, in making a journey which we have made before, we may expect a repetition of some of the former experiences with others left out and still others added, according to changed conditions. The whole process is one of idealization in which the soul is operative as a relating agent. If expectation were perfect in details, we should possess the gift of prophecy, but our limitations are so numerous that the future is seldom just what we expect it to be. The unknown factors prevent our realizing our expectations.

It is evident that, if we may assume, as every rational mind does, that like causes will produce like effects, we possess the power of prophecy just in proportion as we comprehend all the causes that will affect the future. Within a short range, this is sometimes possible. The prediction of the weather for the day may not be difficult in the morning to the "weather-wise" and to the scientific meteorologist approaches certainty. The prediction of an eclipse is a matter of absolute certainty to the astronomer, for the factors influencing the event are few and simple, and the mathematical computation may be free from error. But if the stars should fall! We are not prepared for this emergency!

7. Uses of Imagination.

From what has preceded, it is apparent that no faculty of the soul is more useful than Imagination, as here understood. Progress in science, art and morality, man's three most precious possessions, would be impossible without it. The ordinary affairs of life require its constant aid; for no plan could be formed, no invention could be originated, without it. All the leaders of the world's life have been men of Imagination. Its inventors have formed

new combinations of forces, its generals and statesmen have foreseen new dispositions of nations and empires, its reformers have created ideals that were better than realities, its writers have conceived of characters superior to living men and women, and its moralists have erected standards of virtue and nobility higher than those existing about them.

8. The Dangers of Imagination.

So powerful an activity must have its dangers both for the intellectual and the moral life. The ability to create, involves responsibility for what is created. The false and the inartistic are quite as possible for an imaginative mind as the true and artistic. There is a power in **ideal presence** to make us believe what Imagination produces. Errors of every kind are produced through the influence of Imagination. The false in philosophy and the perverted in art are conspicuous in the world. One may come to despise the real because it is forbidding, and to love the romantic because it is fascinating. The mathematician sometimes demands for every assertion a proof like his demonstration, without comprehension of the grounds of certitude in the realm of induction and probability. He imagines demonstration possible where it is not. The inventor may easily become a visionary and plunge himself and his family into poverty and distress. The philosopher may be a mere dreamer, substituting his ideas for realities. The artist may easily mistake personal idiosyncrasies of taste for canons of art. The moralist also may confuse propensities and obligations. The eccentricities of genius are notorious and the harmony and safety of life are often

sacrificed for whims and conceits. The stronger the imaginative tendency in a person, the more he needs the corrective of "common sense," the real as it is apprehended by the majority, to sustain his equilibrium.

9. The Conditions of Imaginative Activity.

There are certain conditions upon which the activity of Imagination depends. They are

(1) **The presence of images.**—This depends upon the energy of Phantasy. In dull, inert minds few images are presented; in narrow, specialized minds only a certain common-place class of images are awakened. Childhood, as a period of general activity, is favorable to the activity of Imagination, but it is likely to be unrestrained and undirected.

(2) **A decided tendency of mind.**—Unless there be some strong tendency, awakened by desire for some end, the images remain stagnant or enter into mere chance combination in what is called "**reverie,**" in which a succession of ideas drifts aimlessly through consciousness. The musician, the poet, the inventor often possess this tendency to a definite kind of activity in a marked degree and such an inborn aptitude is called "**genius.**" It is usually a wonderful capacity for one kind of activity and an equally remarkable unfitness for others. A less exalted special aptitude, yet sufficiently marked for notice, is what we mean by "**talent.**"

(3) **A voluntary activity of mind.**—Imagination usually involves a *purposive* action of the soul. No one writes a great poem or paints a great picture without purposing to do so. Imagination can be directed and its results are,

for that reason, regarded as more expressive of individuality or personality than any other power which we have so far considered. It is this that renders the artist, whether in literature or pictorial art, responsible for the character of his work and justifies our condemnation of the *man*, as well as the *work*, when the moral element of a production is censurable.

10. Relation of Imagination to Education.

Imagination, as recombining power, is essentially related to the whole range of mental development. No study can be pursued without its aid. No productive act of mind can be carried on without it. Upon the training which it receives depends the quality of most intellectual efforts. We shall consider, then, (1) Imagination in Acquisition, (2) Imagination in Production, and (3) the Training of Imagination.

(1) **Imagination in Acquisition.**—All study, whether of words or things, involves the use of Imagination. Reading or listening, if we gather from words their meaning, we must exercise Imagination in combining into mental pictures the elements suggested by separate words, in order to have before our consciousness what the writer or speaker had before his. We instantly realize the difference between a clear and a confused style by the degree of ease we have in translating sentences into mental equivalents. The facility with which different minds apprehend meaning depends largely upon the liveliness of Imagination. But even when we study things directly, Imagination is necessary to complete our immediate knowledge. As we have seen in the examination of Sense-

perception, the senses give us but fragments of knowledge, to be combined and unified in the mind. We see but one half of the moon, yet we must think of that which appears to be a circular disc as if it were a sphere. The heart of things is always hidden, yet it is the inner constitution that holds the true meaning of everything. No one can study Chemistry, Physics, Astronomy, or Geology without Imagination. It is a *relating* activity of the mind and things are known truly only in their relations. Atoms and molecules are not visible, the correlation of forces cannot be seen, the solar system as a whole is not presented to the senses, geological periods can be pictured only in succession. History is not a collection of names and dates, but a panorama of persons and events. Without historical Imagination, history cannot be well written or comprehended. Hence it is that we learn history more truly from Sir Walter Scott's romances than from the Saxon Chronicle, and every great historian must first recreate the past by Imagination in his own mind before he can give it truthful portraiture.

(2) **Imagination in Production.**—Education aims to impart to the learner some measure of productive power. In school this usually takes the form of composition-writing. Here Imagination is essential. The grasp of a subject, the formation of a plan, the search for materials, the arrangement of them for a purpose, the selection of figures of speech, the use of language as a medium of expression,—all involve imaginative activity. The difference between Phantasy and Imagination is easily discernible here. The mind of a child or a youth is usually filled with images in great variety and profusion, but the difficulty is to combine these into new and coherent wholes.

Evidently, reproductive power falls far short of recombining power. The relating activity is demanded, the ability to seize upon a central idea and array others about it in an orderly and original manner, so as to realize a purpose and give meaning to a production. Rhetorical practice is an effectual intellectual discipline. It affords, perhaps, the best single means of training Imagination which is possible to school exercises.

(3) **The Training of Imagination.**—The characteristic of an active but undisciplined mind is exuberance, a superfluity of images and ideas, disorderly, conflicting, lacking in unity and design, like the rank vegetable growth of a tropical forest. The aim of the educator is to prune away redundancies and introduce unity and order. The best means of training are the contemplation and analysis of masterpieces on the one hand, and personal constructive effort on the other. The former exercise a refining and directing influence upon the learner, illustrating what is to be avoided and what is to be attained in a work of Imagination. Constructive work may then be undertaken. The judicious teacher will be able to apply the principles of correct taste in detail and thus, by kindly criticism, gradually cultivate the right use of Imagination. The wider one's knowledge of facts and principles, the more vitally does the mind seize a central idea and employ it in construction; hence, the more sober and informing studies are useful in giving insight and harmony to the operations of Imagination. Spontaneity in mental creation is the sign of genius, but it usually needs to be directed and enlightened, in order to attain real excellence. Even genius, therefore, is compelled to observe certain rules and principles.

In this Section, on "Imagination," we have considered:—

1. ***Definition of Imagination.***
2. ***The Creative Energy of Imagination.***
3. ***The Character of Imaginative Activity.***
4. ***The Limitations of Imagination.***
5. ***Varieties of Imagination.***
6. ***Expectation.***
7. ***Uses of Imagination.***
8. ***The Dangers of Imagination.***
9. ***The Conditions of Imaginative Activity.***
10. ***Relation of Imagination to Education.***

REFERENCES: (1) Wordsworth's Preface to his *Works*, I. (2) Irving's *Sketch Book*. (3) Fleming's *Vocabulary*, p. 241. (4) Ruskin's *Modern Painters*, II., p. 161. (5) *Id.*, pp. 163, 164. (6) *Id.*, p. 165. (7) Lotze's *Outlines of Psychology*, p. 40. (8) Ruskin's *Modern Painters*, II., p. 150. (9) See Jevons' *Principles of Science*, pp. 576, 577.

CHAPTER III.

ELABORATIVE KNOWLEDGE.

DEFINITION AND DIVISION OF ELABORATIVE KNOWLEDGE.

Elaborative knowledge consists of presentative and representative knowledge worked out by purely psychical processes into higher and more general forms. The name is derived from the Latin *elaborāre*, to work out, and implies a special intellectual activity. It is identical with what is known as "**thought,**" as distinguished from presentative and representative knowledge. It is sometimes called also "**discursive knowledge,**" because it is derived by a discursive process. It includes what was designated by Locke, "**reflection,**" or the process of examining the simpler elements of knowledge and deriving from them more general truth. It is based upon certain "**laws of thought,**" which constitute the subject-matter of Logic, and will be discussed later on. It derives its validity from the certainty of the presentative and representative elements of knowledge employed and the faithful observance of the laws of thought. Elaborative knowledge is worked out by three processes, as follows: (1) **Conception,** which is the formation of abstract or general ideas; (2) **Judgment,** which is the assertion of agreement or disagreement between ideas; and (3) **Reasoning,** which is a process of inference, or arrangement of ideas and judgments according to the laws of thought. These processes will constitute the topics of the sections in this Chapter.

SECTION I.

CONCEPTION.

1. Use of the Word "Conception."

The word "**Conception**" has been used in a variety of senses. It is applied to the *power*, the *process*, and the *product* of forming abstract or general ideas, but recent writers have chosen the word "**Concept**" to designate the *product* of Conception. In the older works on the subject, the word is used with the widest latitude of meaning. We shall use it for the *power* and the *process* only, the poverty of language compelling us to this ambiguity.

2. The Process of Conception.

Conception (from the Latin *con*, with, and *capĕre*, to take, implying a taking or grasping together) **is the process of forming abstract or general ideas.** The nature of Conception can be best exhibited by an examination of the process by which such ideas are formed. This process consists of the following steps:

(1) **Presentation.**—I walk out into a garden and my senses reveal a great number of objects. By Sense-perception I know them as individuals. I perceive a tree. I observe that it has branches and leaves. I see curved and straight lines, brown leaves and green leaves. I hear the wind blowing through the tree-tops. I pick up a branch and touch it. I put a leaf into my mouth and taste it. These are presentations of Sense-perception. Up to this point all the objects are known only as *partic-*

ular individuals. Here the elaborative process is furnished with its materials.

(2) **Comparison.**—When I have perceived these objects, I am led to observe that they have both resemblances and differences. I continue this act of comparison, comparing the objects with one another and noticing their likenesses and unlikenesses. I find that some leaves are green, others are brown, others are yellow, others are red. I find that some are nearly circular, some are oval, some are pointed. I look again and find that all are thin and possess little veins branching out from one another, or from a common stem.

(3) **Abstraction.**—Having discovered that thinness and a veined structure are characteristic of many leaves, I consider these qualities *apart* from the other peculiarities of form and color and shape. In other words, I *abstract* (from the Latin *ab*, off, and *trahĕre*, to draw), or draw off, for further attention, the common qualities of the objects examined. This is called **abstraction.**

(4) **Generalization.**—I now find that these qualities, thinness and a veined structure, belong to the objects examined in common, and I see no leaf without them. They become to my mind the *general* qualities of that class of objects. When I have them in mind, I do not now think of any *particular* leaf in the garden, but thinness and a veined structure come to be regarded by me as belonging to *any* leaf whatever. I thus generalize (from the Latin *genus*, kind or class), or extend to the whole class, the results of my observation, and this process is called **generalization.**

(5) **Denomination.**—After having formed this **general notion** of a leaf, I may consider it for a time without

affixing any name by which to distinguish it from other ideas, to recognize it in the future, or to communicate it to others. But if I leave the newly formed notion, abstracted from all definite material associations, unmarked by any sign, I shall not be able to reproduce it for my own use or to communicate it to another person. The reason of this is plain. A general notion, abstract idea, or **concept,** such as we have now formed, is not a form of sense-knowledge, and cannot be easily reproduced and recognized. A **name** is a form of sense-knowledge, and can be reproduced like any other image or concrete idea. In order to provide an instrument for farther thinking, and in order to convey my meaning to another person, I call my concept by the word "*leaf*," which is an audible and visible sense-sign, or symbol, and this step is **denomination,** or naming. Such a word is called a **"general term."**

It is evident that **language has its origin with a being capable of abstraction.** The creatures lower in the scale of being than man have no language, in the sense of articulate and rational speech, and they have no power of rational thinking. They are wanting in the necessary instrument of thought, language, and they are without it because they have not the intellectual power to create it.[1] We do not name until we have abstracted. The objects of Sense-perception, as particular individuals, are too rich in qualities to afford a ground for naming. Suppose we wish to name a horse. We must fit the name to his qualities. We cannot find a name to designate them all. We find a name for him by abstracting a leading quality or action. The horse *runs*. Our Aryan ancestors seized upon this action of the horse and named him, "*that-which-runs*." A dominant characteristic is thus singled out from the multiplicity of qualities and upon this the name is based. The roots of words in all languages are abstract words, that is, names of qualities, or actions, not of things. Philologists tell us that general ideas precede all speech. We have

seen the reason of it. If language proceeds thus from abstraction and generalization, we understand why it is designated by the word λεγεῖν, which signifies to *choose*, to *gather;* for, in order to form the root which names the thing, there is necessary a prevailing choice eliminating all the secondary characters by an act of Will. Thus, we see, the development of language is simply the development of Reason, and the wise Greeks designated both speech and reason by the same word, λόγος. The utterances of the animals are purely subjective, expressive of feeling, not of ideas. Animals emit *noises*,—emotional sounds, such as grunts, snorts and growls,—but not *words*. Their knowledge is of particulars only, not of general qualities abstracted from their concrete combinations. They have no abstract ideas and, hence, do not reason as men do. The *word* becomes to man the instrument of thought and of its expression. It makes possible to him tradition and history, so that the past lives in the present and the thoughts of each generation become the heritage of the next. Thus science and philosophy, which are impossible to brutes, become the possessions of men. These topics and many others of psychological interest are fully and ably discussed by the eminent philologist **F. Max Müller** (1823–), in his "Science of Thought."

3. The Completed Concept.

Having traced the formation of a concept, we may now ask, What, precisely, is the nature of this product? We may note the following negative and positive traits:

(1) **A Concept is not a Percept.**—A percept is *individual* and its union with other percepts is either a new individual whole or a collection of individuals, while a concept is *general*.

(2) **A Concept is not an Image.**—The difference between a concept and an image is as marked as that between a concept and a percept. An image is an individual or a group of individuals.

(3) **A Concept combines similar qualities.**—A concept unites in one form of knowledge the resemblances which

have been observed in individual objects, and thus embraces what is *common* to them all. The lower animals observe resemblances and differences as well as man, and, by their superior keenness of sense, sometimes more readily; but a brute is not known to have the power to combine like qualities into a unit of knowledge, a concept.

(4) **A Concept is purely relative.**—It has no meaning except in relation to all the individual things for which it stands. It is variously called a "**general notion,**" an "**abstract idea,**" or a "**universal,**" because it applies equally well to any one of a class or kind of individuals.

(5) **A Concept is an incomplete form of Knowledge.**—As a concept combines only certain common, or general, qualities, it excludes all those which are peculiar to individuals and not common to a class. Thus, if I think of a "leaf" as something "thin and of a veined structure," I have an incomplete knowledge of a "leaf" in that concept; for every actual "leaf" has, in addition to these common qualities, some definite outline, size, and color, which must be added, to form a complete knowledge of it.

Galton has suggested that abstract ideas, or concepts, may be regarded as "**generic images**" or "**composite pictures.**" He has illustrated his meaning by means of "**composite photographs,**" or photographs in which a great number—sometimes as many as forty or fifty—of individual faces are combined in one composite picture. He says: "I doubt whether 'abstract idea' is a correct phrase in many of the cases in which it is used, and whether 'cumulative idea' would not be more appropriate. The ideal faces obtained by the method of composite portraiture appear to have a great deal in common with these so-called abstract ideas. The composite portraits consist of numerous superimposed pictures, forming a cumulative result in which the features that are common to all the likenesses are clearly seen; those that are common to few are relatively faint and are more or less overlooked, while those that are peculiar to

single individuals leave no sensible trace at all."[2] This is an ingenious suggestion and, without doubt, there are mental composites, formed by Imagination, which correspond closely to the composite portraits produced by photography ; but every such composite image has a definite size, form and color, while a concept, or abstract idea, has no definite size, form or color. Our concept "horse," for example, stands for all the individuals of the horse kind, from a diminutive Shetland pony to a ponderous Clydesdale draught-horse, and of any color between the extremes of white and black. A concept is something far more attenuated and immaterial than any composite picture which can be produced. We have, however, a mental tendency to substitute an image for a concept in our actual thinking. The image thus substituted is rather some well-known individual than a composite. Galton has himself illustrated this in another place. "Suppose," says he, "a person suddenly to accost another with the following words : 'I want to tell you about a *boat*.' What is the idea that the word 'boat' would be likely to call up ? I tried the experiment with this result. One person, a young lady, said that she immediately saw the image of a rather large boat pushing off from the shore, and that it was full of ladies and gentlemen, the ladies being dressed in white and blue. It is obvious that a tendency to give so specific an interpretation to a general word is absolutely opposed to philosophic thought. Another person, who was accustomed to philosophize, said that the word 'boat' had aroused no definite image, because he had purposely held his mind in suspense. He had exerted himself not to lapse into any one of the special ideas that he felt the word 'boat' was ready to call up, such as a skiff, wherry, barge, launch, punt or dingy. Much more did he refuse to think of any one of these with any particular freight or from any particular point of view. A habit of suppressing mental imagery must, therefore, characterize men who deal much with abstract ideas; and, as the power of dealing easily and firmly with these ideas is the surest criterion of a high order of intellect, we should expect the visualizing faculty would be starved by disuse among philosophers, and this is precisely what I found on inquiry to be the case."[3] This goes to show that abstract ideas are not images of any kind, but that persons with untrained minds use concrete images in place of them, thus missing that accuracy and precision of thought which they are fitted to serve.

4. The Reality of Concepts.

The abstract nature of concepts has led to a long and even bitter controversy on the following questions: (1) Have concepts, or universals, *external existence,* or do they exist in the mind only? (2) If they have external existence, are they *corporeal* or *incorporeal?* (3) Are they *separable* from sensible objects, or do they *subsist in these* only? Four principal views have been held on these questions, the last very recently presented, which are known as Realism, Nominalism, Conceptualism and Relationism. We shall examine these views separately.

5. Realism.

There are two classes of Realists, differing quite materially in their views.

(1) The **Extreme Realists** maintain the doctrine attributed to **Plato** (430–347, B.C.), that universals have existence separate from and independent of individual objects. For example, in addition to this, that, and the other *particular* mountain, visible to the sense, there is, really existing, *mountain* in the abstract. They hold that universals existed *before* individuals. Their view is expressed in the Latin formula, *Universalia ante rem,* "Universals *before* the thing." The doctrine rests on Plato's opinion that ideas are eternal.

(2) The **Moderate Realists** accept the opinion of **Aristotle** (384–322, B.C.), that, while universals have a real existence, they exist not before, but only *in,* individual objects. Their view is expressed in the formula, *Universalia in re,* "Universals *in* the thing."

A brief **historic outline of these doctrines** may be of interest in throwing light upon the nature of concepts. **Socrates** (469–396, B.C.) insisted upon the importance of forming concepts of things, in order to rise from the particular to the universal, and advocated their objective validity. He did nothing, however, to explain the nature of concepts. **Plato** advocated more strenuously than Socrates the necessity of this higher knowledge, and taught that we must rise from the individual and transitory to the idea of the universal and eternal. This ultimate object of intelligence is the *idea* (*ἡ ἰδέα* or *τό εἶδος*). Plato does not teach *where* ideas, in this transcendental sense, exist, but he regards them as the only true realities and eternal in their nature. Things and events are only the passing shadows of ideas. The highest idea is that of God. Plato ascribes to ideas wonderful powers and personifies them, in order to make his philosophy acceptable to the common mind. He treats them sometimes in a poetic rather than a scientific manner, and finally gives to his teaching the qualities of intellectual romance. **Aristotle** regards individual things as the only truly real beings, or *primary entities* (*πρῶται οὐσίαι*) as he calls them. Concepts, or universals, he calls *secondary entities* (*δεύτεραι οὐσίαι*), and distinguishes them from primary entities as *form* is distinguished from *matter*. The form exists *in* the matter, but is *not* the matter. Form is universal, matter is particular. Aristotle wished to avoid that hypostasizing of universals which he criticised in Plato, that is, the regarding universals as real, apart from the individuals to which they belong. His followers, however, were not attentive to this point, and came at last to consider universals as realities in a sense not intended by their master.

6. Nominalism.

The **Nominalists** hold that individuals only have real existence, and that universals are merely groups of resemblances held together by a *name*. Universals have no existence, except as names signifying certain qualities belonging in common to many things. **Hobbes** says: "The universality of one name to many things hath been the cause that men think the things themselves are universal;

and so seriously contend that, besides Peter and John and all the rest of the men that are, have been, or shall be in the world, there is something else that we call *man*, viz.: *man in general*, deceiving themselves by taking the universal or general appellation for the thing it signifieth." The view of the Nominalists is expressed by the formula, *Universalia post rem*, "Universals *after* the thing." They are represented among modern philosophers by the Associational School of thinkers.

Realism of some kind was practically universal among the thinkers of antiquity. The **Sophists** of Greece, prior to the time of Socrates, had fallen into a practical Nominalism, attempting as they did to prove anything and treating words as standing for nothing fixed and absolute. With this exception, philosophers regarded general notions as representative of realities. In the third century of the Christian era, **Porphyry** (233–304) wrote a preface to Aristotle's work on the Categories, which was translated into Latin from the Greek by **Boethius** (470–526). This was the occasion of the controversy on the nature of universals. Dogmatic theology allied itself to Realism. The earlier disputes were between the extreme and the moderate Realists, **Scotus Erigena** (died, 886) reviving the extreme Realism of Plato in opposition to the moderate Realism of the Aristotelians which was generally accepted by theologians. **Roscellinus** of Compiègne (f. 1092), though probably not the originator of Nominalism, taught that universals have no substantive or objective existence, but are *mere names*, and was compelled to recant this alleged heresy, which was regarded as involving a false doctrine of the Trinity. The doctrine of Nominalism, thus placed under ecclesiastical ban, was destined to become a prevailing position of philosophers. The view of **Hobbes** has been already given in the quotation cited above. It has become the inheritance of the Associational School of thought as represented by **Hume**, the two **Mills**, **Bain** and **Spencer**. **J. S. Mill** admits, however, a double significance of a concept, its **denotation**, or the things noted by the name, answering to the **extension** of a term, and its **connotation**, or the attributes noted by the name, answering to the **comprehension** of a term, as treated by logicians.

7. Conceptualism.

The **Conceptualists** agree with the Nominalists in holding that individuals only have real or objective existence, and that universals exist in the mind only, being formed by abstracting and generalizing common qualities. In addition to the name, however, they believe in the existence of a *mental state* which they call a "concept." The formula of the Nominalists, *Universalia post rem*, "Universals *after* the thing," also expresses the doctrine of Conceptualists. Conceptualism is commonly accepted by modern philosophers. It vindicates itself against Realism by the impossibility of explaining just *what* and *where* the objective realities said to correspond to universals are; and against Nominalism by the facts that in consciousness we regard the *import* of the name, that is, the *concept*, rather than the name itself; and that knowledge of concepts *precedes* and *determines* the selection of names to designate them.

The **historic origin of Conceptualism** is somewhat obscure. Some have attributed it to **Abelard** (1079–1142), but **William of Occam** (died, 1347) seems to have been the chief, if not the earliest, representative of Conceptualism. Conceptualism bears such close relation to Nominalism that Conceptualists are sometimes called "**Moderate Nominalists.**" **Locke, Reid** and **Brown** were Conceptualists. The closeness of the alliance between Nominalism and Conceptualism is striking when we consider that **Hamilton** sometimes speaks like a Nominalist (in his "Lectures on Metaphysics"), and sometimes like a Conceptualist (in his "Lectures on Logic"). **Kant** is so remote from Realism that he regards the concept as entirely the product of the mind and yet he is not a Nominalist, because he regards the concept as mentally real apart from the name. For him the concept (*Begriff*) is the product of the Understanding (*Verstand*) and derives its form entirely from the *inherent forms of the mind.* This is the origin of Kant's **Subjectivism,** denying any knowledge whatever of

Reality (*Noumenon*) and considering it as pertaining wholly to appearances (*Phenomena*). Quantity, Quality, Cause, Space and Time are, for Kant, simply *subjective forms of the mind itself*, without objective existence. **J. G. Fichte** (1762–1814) pushed this view so far as to regard the entire universe as an *evolution of the Ego* by a process of thinking. **G. W. F. Hegel** (1770–1831) went still farther and denied all reality, both subjective and objective, except the *process of thought itself*. The inconsistency and emptiness of **Phenomenalism**, the logical result of Nominalism and Conceptualism in the English and German philosophies emanating from Hume and Kant and their followers, have been ably pointed out by an American thinker, **Francis E. Abbot** (1836–).[4]

8. Relationism.

This is a new formulation of the truth that is divided between the three forms of doctrine already stated. It teaches that universals are (1) *objective relations of resemblance* among objectively existing things; (2) *subjective concepts* of these relations, determined in the mind by the relations themselves; and, (3) *names*, representative both of the relations and the concepts, and applicable to them both. The formula of this theory is, *Universalia inter res*, "Universals *among* things."

This theory has been formulated by **Francis E. Abbot,** in whose words the statement of doctrine above is given. **Brown** long ago said that he would prefer to be called a "Relationist," but the clear and satisfactory formulation of Relationism is due to Abbot. He holds that **the doctrine rests upon the following self-evident propositions:** "(1) Relations are absolutely inseparable from their terms. (2) The relations of things are absolutely inseparable from the things themselves. (3) The relations of things must exist where the things themselves are, whether objectively in the cosmos or subjectively in the mind. (4) If things exist objectively, their relations must exist objectively; but if their relations are merely subjective, the things themselves must be merely subjective. (5) There is no logical alternative between affirming the objectivity of relations in and with

that of things and denying the objectivity of things in and with that of relations. For instance, a triangle consists of six elements, three sides and three angles. The sides are things; the angles are relations—relations of greater or less divergence between the sides. If the sides exist objectively, the angles must exist objectively also; but if the angles are merely subjective, so must the sides be also. To affirm that the sides are objective realities, even as incognizable things-in-themselves, while yet the angles, as relations, have only a subjective existence, is the *ne plus ultra* of logical absurdity. Yet Kantianism, Nominalism, and all Nominalistic philosophy (if they admit so much as the bare possibility of the existence of things-in-themselves) are driven irresistibly to this conclusion."[5] This writer clearly shows that, if we deny objective reality, we are finally shut up to Phenomenalism and this must assume the form of Individual Idealism, that is, our knowledge is of mental states alone, and all objective science becomes impossible. **The scientific method**, on the contrary, assumes the reality of things and of their relations, and scientific **verification** presents a confirmation of this assumption in the positive results of established science. The breach between Subjectivism in philosophy and Objectivism in science is now so wide that Science and Philosophy seem to represent two hostile camps, or perhaps it would be more exact to say, two separate fields of labor where men are working by diametrically opposite methods. The unsophisticated soul finds no antagonism between its internal experiences and its objective knowledge; but, on the contrary, believes that they are in perfect harmony. This shows that Subjectivism in philosophy is not the product of a true psychological method but of a theory of ideas that is false from the beginning. **Mill** and **Kant** have both done violence to the facts of consciousness in shutting the soul in from the objective world. We find relations *where the things related are*, whether within or outside of self. Self knows that it is circumscribed and yet knows verifiable relations beyond itself. The primary affirmations of the soul (see page 6) formulate our conscious knowledge upon this point.

9. Perfect and Imperfect Concepts.

If a concept is a system of relations apprehended by the mind, it is evident that it may be perfect or imperfect,

according as the actual relations between things are or are not fully and correctly apprehended. A concept may be too *wide*, that is, it may include more than the real things include; or it may be too *narrow*, that is, it may include less. Our concepts are formed with varying degrees of attention to real relations. We connect certain concepts with certain words without fully comprehending the signification of the words. Words themselves are ambiguous, at times including less and at times more of meaning than at others. We are thus exposed to liabilities of error in our processes of judgment and reasoning based on concepts. It is the business of Logic, as the science of thought, to lay down rules to guide us in the practical use of concepts, and hence we need not enter farther upon this subject here.

10. The Hypostasizing of Abstract Ideas.

A quality abstracted from a thing and the relations existing between things, held in the mind as concepts, are not *things*, but *qualities* and *relations*. "Greenness," for example, is not a *thing*, but a *quality*. "Man," taken as a general term, is not a *thing*, but a *concept*, or system of relations of resemblance found among men. Hobbes was right in holding that it is nonsense to speak of "man" apart from all individual men. The doctrine of Relationism holds that universals have reality only *among* the things related, that is, *as relations*. Evidently, then, we fall into a great error if we regard a concept, or system of relations, as if it were a *substantial thing*. Such a mental act is called the **hypostasizing** of an idea (from the Greek *ὑπό*, *hypo*, under, and *ἱστημι*, *histēmi*, to stand), implying the mental placing of a substance under the ab-

stract idea. Many erroneous systems of thought originate from this radical error of treating an abstract quality or a system of relations as if it had independent and substantial existence. We have a tendency to treat every name as if it stood for a thing, whereas many names stand for qualities or relations which have no separate existence *apart* from the things of which they are qualities or relations.

As **an example of this error** in philosophy, take **Hegel's** use of what he calls "*the idea*," which, as an empty abstraction, is capable of being used in any way one fancies without apparent inconsistency so long as one is strictly logical in the treatment of it, that is, so long as self-contradictions are not introduced. Out of this "*idea*," which is so void of positive content that it can be identified with non-being, he manages by logical jugglery to evolve the universe! This is **the great vice of Metaphysics,**—*the treatment of abstract ideas as if they were realities.*

11. Relation of Conception to Education.

Conception has a threefold relation to education: (1) it is essential to scientific knowledge; (2) it is developed by linguistic study; and (3) it affords a criterion for the order of study.

(1) **Scientific Knowledge.**—Science is not an accumulation of isolated facts, but of facts grouped in classes, explained by laws, and expressed by a suitable nomenclature. Abstraction and generalization are necessary for the formation of classes, the discovery of laws, and the application of names. The mere inspection of plants, for example, does not give us Botany. It is by comparison of numerous plants that we reach the principles of classification. Abstraction is then employed in classing separate plants under these principles. By generalization we reach universal

terms which designate all the plants of a kind, or class. This is the method of every science. We begin with particular individuals and proceed to general terms and universal principles. Only by the aid of Conception, then, can we attain to scientific knowledge of any subject.

(2) **Linguistic Study.**—Language is made up largely of general terms. All common nouns are such class-names. "Plant," "animal," "triangle," etc., are examples. All such adjectives as "red," "round," "vital," etc., are names of qualities which, when abstracted by the mind from their concrete combinations, are designated by abstract nouns, such as "redness," "roundness," "vitality," etc. All study of language is practice in conceiving such classes, such qualities and such abstractions. This study is, then, especially adapted to cultivate the conceptual powers. It calls forth the comparative habit. The effort to grasp the meaning of a new word involves the exercise of all the powers of Conception. Only "word-dividing man," in Homer's phrase, is capable of thinking. The ready-made concepts of those who have formed a language are conveyed to the mind through the attentive study of it. Hence it is that the learning of a highly complex and elaborate language, like the Latin or the Greek, has been held to be conducive to a development of the conceptual powers and the best preparation for scientific pursuits.

(3) **The Order of Studies.**—In the relations already pointed out, we find a criterion for the order of studies. There are in the growth of the mind three essential processes: (*a*) *apprehension* of facts, (*b*) *analysis* of facts, and (*c*) *synthesis* of relations. In Botany, for example, plants must be *seen*, their parts *separated* and their common characteristics *united* under general terms.

Such concepts as "nutrition," "growth," "reproduction," etc., are reached by this method. But the second and third processes are dependent upon language. We have already seen that language is an instrument of analysis (p. 82). The whole of the present section has shown how it is an instrument of synthesis. The method is always the same. Hence we infer that the earliest studies should be presentative and linguistic at the same time. After a sufficient number of facts has been accumulated and language has trained the mind in the use of conceptual power and furnished the instrument for it, the more abstract studies should follow, such as Physical Science (as organized knowledge), the Lower Mathematics, Grammar, Rhetoric, Logic, the Higher Mathematics, Psychology, etc. Physical Geography is much more abstract than Descriptive Geography, Algebra than Arithmetic, and Grammar than Literature. Written Arithmetic and Algebra are much less abstract than Grammar, as most students find, for in these mathematical studies there is always a concrete symbol before the eye, which is treated according to a fixed rule, while in Grammar the classification embraced in the "parts of speech" is really based on the structure of thought itself.

This subject is of such practical interest to the teacher that it seems desirable to treat it more fully. **Alexander Bain**, in his "Education as a Science," has offered some very valuable suggestions on **the method of developing abstract ideas** in the mind of a learner. For the benefit of those to whom the book may be inaccessible, the following epitome is attempted. (1) *The selection of particulars should be such as to show all extreme varieties.* Identical instances are not to be accumulated. They merely burden the mind, while varying instances show the quality under every combination. To bring home the abstract property of "roundness," or

the circle, we must present concrete examples in varying size, color, material, situation and circumstances. We cannot exhibit a circle in the abstract, and we cannot present a real one without size; but we can reduce the material to a thin black line on a white ground. Two or three such, of different sizes, with one made of white on black ground and one in some other color would eliminate everything but the single property of form. This comes as near to abstracting the property as the case allows. (2) *The instances cited should bring out the agreements.* If the objects are material, they should be similarly and symmetrically situated to the eye. The comparison of numbers, as three, four, five, should be in rows side by side, to begin with. (3) *The accumulation should be continuous, until the effect is produced.* We should put everything else aside for the time. An overwhelming concentration at one point is needed. Any instance that is perplexing in itself will prove distracting. Examples that are very interesting from other points of view produce the same distracting effect. Contrast is useful. To create in the mind the abstract idea of a circle, we may place it beside an oval. (4) *A sudden flash of agreement between things in many respects different, is what is aimed at.* When among things that have formerly been regarded as different, there is a sudden flash of agreement, the mind is arrested and pleased; and the discovery makes one great element of intellectual interest, imparting a positive charm. (5) *Aid can be derived from the tracing of cause and effect.* The notion of cause and effect, the crowning notion of science, is one of the first to dawn upon the infant mind. The simplest movements are attended with discernible consequences: the fall of a chair with noise; the taking of food with gratification. These instances are the beginnings of the knowledge of causes ; and they are viewed correctly from the first. Now when any agent produces an apparent change or effect, it operates by only *one* of the many properties that it possesses as a concrete object. A chair has form to the eye, resistance to the hand, noise to the ear; and as these effects are seen in their separate workings, they lead on to analysis or abstraction of the properties causing them. (6) *The number of instances necessary varies with the character of the things.* Very few are needed for a simple form—for weight, liquidity, transparency. For a metal, a plant, a tree, a bird, an article of food, a force, a society—a good many are wanted. (7) *The name and the definition should be given along with the general*

notion, when it is formed. The definition assigns some simpler notions, supposed to be already possessed. The fact that inability to form abstract ideas is the principal stumbling-block in the way of all learners, warrants particular pains and indefatigable industry on the part of the teacher in giving intelligent aid at this point.[6]

In this section, on Conception, we have considered:

1. ***Use of the word "Conception."***
2. ***The Process of Conception.***
3. ***The Completed Concept.***
4. ***The Reality of Concepts.***
5. ***Realism.***
6. ***Nominalism.***
7. ***Conceptualism.***
8. ***Relationism.***
9. ***Perfect and Imperfect Concepts.***
10. ***The Hypostasizing of Abstract Ideas.***
11. ***Relation of Conception to Education.***

REFERENCES: (1) F. Max Müller's *Science of Thought*, Chapter IV. (2) Galton's *Inquiry into Human Faculty*, pp. 183, 184. (3) *Id.*, pp. 109, 110. (4) Abbot's *Scientific Theism*, p. 1 *et seq.*, and *Mind*, Oct., 1882, p. 461 *et seq.* (5) *Id.* (6) Bain's *Education as a Science*, pp. 193, 197.

SECTION II.

JUDGMENT.

1. Definition of Judgment.

Judgment is the process of asserting agreement or difference between ideas. It is essentially the relating activity of Intellect. It implies the pre-existence of elements of knowledge between which relations of agreement or disagreement can be discovered. For example, to judge

that two colors are, or are not, the same, it is necessary that each should be separately apprehended. The expression of an act of judgment in language is a **proposition.**

Nothing but a proposition, expressed or implied, **can embody truth.** Things, states and qualities can be apprehended as real, but we cannot say a "house" is true, or a "sensation" is true, or a "color" is true. Truth is the correspondence of consciousness with reality. When we assert an agreement or a disagreement to exist and it actually does exist, our judgment is true and what we assert is true. Truth can never be attained and error can never be eliminated, except by acts of Judgment. We do, however, apprehend reality by direct intuition, or immediate knowledge. At least two realities must be apprehended before a judgment can be formed. That our apprehensions of reality, apart from all acts of Judgment, are very rudimentary, is evident from the place which interpretation has in the sphere of Sense-perception.

2. Relation of Judgment to Other Processes.

Judgment is involved in nearly all the forms of knowledge which we have thus far examined. Although we must separate the various psychical acts for purposes of analytical study, it should not be forgotten that they are intimately blended in the actual processes of knowledge. Thus, Judgment is employed in Sense-perception, and all our acquired perceptions are products of Judgment exercised upon our original perceptions. Every act of recognition is an act of Judgment, in which the represented idea is asserted to be the representative of something we have previously known. In acts of Imagination, the fitness of means to ends is constantly asserted. In Conception, the acts of comparing, generalizing, and denominating are exercises of Judgment. As we shall soon see, every process of Reasoning is a series of dependent Judgments.

3. The Elements of a Judgment.

Every judgment has three essential elements. They are: (1) the **Subject,** or that of which something is asserted; (2) the **Predicate,** or that which is asserted of the Subject; and (3) the **Copula,** or that which asserts agreement or disagreement of the Subject and Predicate.

Sometimes the three elements are expressed in three separate words; as, *Man* (subject) *is* (copula) *mortal* (predicate). Frequently the subject is expressed in one word and the copula and predicate are united in one; as, *Man* (subject) *dies* (copula and predicate united). The copula simply expresses agreement or disagreement, according as it is affirmative or negative, but does not necessarily involve actual *existence.* The verb "to be," in its various forms, sometimes expresses the mere *relation* between the subject and predicate, and sometimes involves also the predicate of *existence,* or actual being.

4. Classification of Judgments.

Judgments are of various kinds and may be classified differently, according to the manner in which they are employed or regarded. The most important distinctions are expressed in the following classes:

(1) As to **origin,** judgments are (*a*) **analytical,** when the predicate simply *unfolds* what is already contained in the subject, without adding anything new; as, "All triangles have three sides"; and (*b*) **synthetic,** when we assert of the subject something not already implied in it and thus increase our knowledge; as, "All the planets attract other material bodies according to their mass."

Analytical judgments are sometimes called "explicative," and synthetical judgments, "ampliative." **An analytical judgment is not necessarily tautologous,** that is, the predicate does not simply repeat the subject. It unfolds the content of the subject and sets it in a new light. It explains what the subject really means.

(2) As to **certainty,** judgments are (*a*) **problematical,** when founded on mere *opinion,* the assertion being neither subjectively nor objectively known to be true; (*b*) **assertive,** when founded on personal *belief,* as when a subjective conviction is offered without verification; and (*c*) **demonstrative,** when founded on *constitutive principles or verified proof,* as the axioms and demonstrations of mathematics.

Opinion is a view of a subject that may be entertained without evidence, being based merely on pre-conceptions. It presents a problem to be investigated, but is not itself conclusive, even for the one who entertains it. **Belief** is based on some evidence, but it may vary greatly in amount, according to the intellectual habits of each person. The evidence that induces belief in one may not induce it in another. There are degrees of belief. In the sphere of probability, belief must take the place of knowledge. In all the practical affairs of life it is sufficient for action, and the wise man does not wait to know, but acts on his beliefs. In the sacred relations of husband and wife, parent and child, lender and borrower, buyer and seller, teacher and pupil, belief must satisfy. These relations are *sacred* for the reason that demonstration is impossible. Here enters the principle of "honor," which consists in a recognition of the sacredness of these personal relations. **Demonstration** rests upon the certainty of knowledge and the processes of knowledge, and admits the element of verification. It is excluded from all those spheres where trust in the veracity of a person is involved, and these are the ones in which our affections, our business prosperity, and our religious hopes are included.

(3) As to **form,** judgments are (*a*) **categorical,** when the assertion is unqualified by any condition; as, "Man is

mortal"; and (*b*) **conditional,** when the assertion is qualified by a condition; as, "*If* this is a man, he is mortal." Conditional judgments are further divided into *hypothetical, disjunctive,* and *dilemmatic,* which are explained in Logic.

(4) As to **quantity,** judgments are (*a*) **universal,** when the predicate is affirmed universally of the subject; as, "*All* clouds are vaporous"; and (*b*) **particular,** when the predicate is asserted of only a part of the subject; as, "*Some* men are vicious."

(5) As to **quality,** judgments are (*a*) **affirmative,** when they affirm a relation to exist between subject and predicate; as, "Men are rational beings"; and (*b*) **negative,** when a relation is denied between subject and predicate; as, "Men are not omniscient."

(6) As to **inclusion,** judgments are (*a*) **extensive,** when an attribute taken as a subject is asserted to exist in objects taken as predicates; as, "The Whites are English, French, Germans, etc."; and (*b*) **comprehensive,** when anything taken as a subject is asserted to possess an attribute taken as a predicate; as, "All Europeans are white."

5. The Categories of Judgment.

It is evident that the possible modes of assertion are limited by the nature of the things about which we make assertions. Let us take an example. I see a tree in a garden. I may assert of it:

(1) **Being,** or existence. It has (*a*) *Quantity,* that is, it is *more or less* than other trees. It has (*b*) *Quality,* that is, it is of some *kind,* as a maple. It has (*c*) *Mode,* that is, it is *solid,* not liquid or gaseous. It has (*d*)

Number, that is, it is *one of many* trees. It has (*e*) *Relation,* that is, its parts are *specially disposed.* I may assert of it also:

(2) **Cause,** or active power. It has (*a*) *Efficiency,* that is, *productive* power. It has (*b*) *Finality,* that is, *adaptation to an end,* or purpose. I may farther assert of it:

(3) **Space,** or co-extension. It has (*a*) *Position,* (*b*) *Direction,* (*c*) *Distance,* (*d*) *Surface* and (*e*) *Magnitude.* Finally, I may assert of it:

(4) **Time,** or continuance. It has (*a*) *Succession* in the production of its parts and (*b*) *Duration* as a whole.

These predicates have been called the **Categories** (from the Greek *κατηγορέω, kategoreo,* to predicate or assert), or general kinds of assertion that may be made with respect to anything. The power to know these highest predicates, which are structural elements in the nature of things and in the composition of thought, is called **Reason.** Rational Judgment is the process of asserting agreements and disagreements under these categories, or forms of knowing.

The **doctrine of the categories** is very ancient. Those of the Greek philosopher, **Pythagoras** (586–506, B.C.), are the earliest known. **Aristotle** subsequently stated them as follows: (1) substance, (2) quantity, (3) quality, (4) relation, (5) place, (6) time, (7) situation, (8) possession, (9) action, and (10) suffering.[1] This statement of the categories was afterwards modified by various philosophers. The **Stoics** reduced them to four: (1) substance, (2) quality, (3) manner and (4) relation. **Plotinus** attempted a new system, but Aristotle's statement was generally received until the time of Bacon. In modern times **Kant's doctrine of the categories** is important. He names the following: I. *Of Quantity:* (1) Unity, (2) Plurality, (3) Totality. II. *Of Quality:* (1) Reality, (2) Negation, (3) Limitation. III. *Of Relation:* (1) Substance and Accident, (2) Cause and Effect, (3) Reciprocity. IV. *Of Modality:* (1) Possibility, (2) Existence, (3) Necessity. These are the categories of the Understand-

ing. Of Sensuous Intuition there are two others: Time and Space.[2] According to Kant, all these are mere forms of the intelligence, not structural elements in actual Being. They are for the mind only, prescribing the necessities of thought, but not inherent in reality. While no rational process is possible without categories, it would probably be presumptuous to suppose that any classification of them is faultless. It is difficult to state them in such a manner as to avoid a repetition of some element under the different names. A reason for this may be that concrete realities involve many of them at the same time, and our analysis cannot exhaust them without repeating them. An explanation of each of the categories as given in the text above is attempted in the treatment of Constitutive Knowledge. The reference to them here is necessary in order to show the bases upon which Rational Judgment rests.

6. The Relation of Judgment to Education.

Education aims to develop the power of judging. It does not attempt to supply a complete stock of verified propositions. The educated man is one whose power of independent Judgment has been so cultivated that he can form verified propositions for himself in any field of investigation. The uneducated man can follow an old rule, but the educated man can discover new rules. Two important educational problems arise here: (1) how far to encourage independence of Judgment in a learner, and (2) how to cultivate the power of correct Judgment.

(1) **Independence of Judgment in the learner.**—Abject deference to authority and absolute independence of authority are two extremes which are, perhaps, equally remote from the proper spirit of a learner. Too much dependence upon a teacher's *ipse dixit* divests the pupil of all real intellectual activity and renders him the passive recipient of pre-arranged ideas. Such a learner can never be much more than a parrot. On the other hand, too

much self-confidence in a pupil renders the correcting influence of a superior mind ineffectual. Such a learner receives no training. In order that development of Judgment may be acquired, the power must be both exercised and trained. The learner must, therefore, be allowed, and if backward must be urged, to form judgments without aid from others. He must also be required to submit his own judgments to the revision and correction of his teacher. The relation of teacher and pupil has no reason for existing, if it does not imply the teacher's superiority in the special department in which instruction is undertaken, and the pupil's position as a learner requires his respectful recognition of this superiority. The teacher's function, however, is not simply to implant a system of truth, but to develop an intelligence. This requires that independence of judgment should be encouraged where it is necessary as well as repressed where it is too prominent. To develop power without conceit, is the teacher's difficult task.

(2) **The Cultivation of Judgment.**—The power to judge correctly is cultivated by well-directed practice, which gradually supplies the mind with rules of experience, some growing out of the particular subject-matter with which we deal, others of a more general character. We thus learn what are the sources of error and what are the tests of truth. The exact sciences are more favorable for the cultivation of Judgment than the speculative sciences; for in the former verification is possible, so that the learner can test his own judgments, while in the latter he cannot. The sphere of practical action is especially favorable for the development of Judgment, for errors are here rebuked by consequences which render the mind cautious and ac-

curate in its operations. Theory often fails in practice, but intelligent practice seldom fails to suggest a true theory. The laboratory of experimental science is an excellent primary school of Judgment. So also is the workshop.

A writer on the **value of industrial education,** says, in pointing out the influence of action on thought : "The mind and the hand are natural allies. The mind speculates, the hand tests the speculations of the mind by the law of practical application. The hand explodes the errors of the mind ; for it inquires, so to speak, by the act of doing, whether or not a given theorem is demonstrable in the form of a problem. The hand is, therefore, not only constantly searching after truth, but is constantly finding it. It is possible for the mind to indulge in false logic, to make the worse appear the better reason, without instant exposure. But for the hand to work falsely is to produce a misshapen thing—tool or machine—which in its construction gives the lie to its maker. Thus the hand that is false to truth, in the very act publishes the verdict of its own guilt, exposes itself to contempt and derision, convicts itself of unskilfulness or of dishonesty." [3]

In this section, on "Judgment," we have considered :

1. ***Definition of Judgment.***
2. ***Relation of Judgment to Other Processes.***
3. ***The Elements of Judgment.***
4. ***Classification of Judgments.***
5. ***The Categories of Judgment.***
6. ***The Relation of Judgment to Education.***

References : (1) Aristotle's *Categories,* IV., 1. (2) Kant's *Critique of Pure Reason* (Müller's Translation), II., p. 71. (3) Ham's *Manual Training,* pp. 144, 145.

SECTION III.

REASONING.

1. Definition of Reasoning.

Reasoning is a process of inference in which a new judgment is derived from other known judgments. It implies the existence of a regulative faculty, or **Reason,** whose structural principles are employed in connecting ideas and judgments. It is a **discursive,** as distinguished from an intuitive, action of Intellect, and presupposes not only materials of presentative knowledge with which it deals, but also regulative principles which give validity to the process.

A question naturally arises as to **the validity of the reasoning process.** A conclusion, or result of reasoning, seems to have the character of a manufactured article, and we may well doubt the ability of the mind to *make* truth. The difficulty is readily removed, however, if we consider that reasoning is simply the more explicit statement of what is already involved in presentative and representative knowledge. If A is equal to B, and B is equal to C, then it is certain that A is equal to C, although this is a new judgment, for its truth is necessitated by the truth of the previous judgments. But this necessity is owing to a law of thought which is also a law of things, namely, the Law of Identity. If there are no certain and necessary laws of thought, or if the laws of thought are not also laws of things, we have no warrant for the process of reasoning in any of its forms, and no conclusion can be demonstrative. The nature of these foundations we shall discuss under Constitutive Knowledge, and it is sufficient here to exhibit the dependence of all reasoning upon constitutive principles and to illustrate the manner in which it employs them in giving validity to inferences. We shall thus be prepared for an examination of the rational constitution of the mind.

2. The Assumptions of all Reasoning.

Reasoning would be impossible if there were not a correspondence between the processes of the soul and the external operations which move and combine the real objects of knowledge. If we can arrive at the real relations of things outside of ourselves by combining our ideas according to the laws of thought, it is certain that those things are governed and arranged according to the same laws of thought. In brief, if subjective thought can reach objective truth, it is because objective realities are regulated by the same laws of thought. The thought of man, when correct, is but the transcript of thought that is not his own, but which was before his, regulates his, and is above his.

Philosophical Skepticism has its origin in doubt concerning the trustworthiness of the reasoning process. One of its earliest historic representatives was **Pyrrho** of Elis (about 360–270 B.C.), a Greek philosopher, or rather doubter of the possibility of philosophy, from whose name philosophical skeptics are sometimes called **Pyrrhonists.** He asserted that, of every two contradictory propositions, one is not more true than the other. A later representative of this school of thinkers was **Sextus Empiricus** (about 200 A.D.), who claimed to be able to disprove the possibility of demonstration ! The paradox of a *demonstration that there can be no demonstration,* is evidently rational suicide. Subsequent ages have had representative skeptics. **Hume** and his followers belong to this school, in so far as they are consistent, if consistency is conceivable in one who rejects the postulates of Reason.

3. Inductive Reasoning.

Induction is the inference of a conclusion by generalization from particular facts. The conclusion is a universal judgment. The great problem in the discussion of

inductive reasoning is to show how we can pass from the particular to the universal. It is evident that we must assume some universal principles, or else we cannot sustain the validity of inductive reasoning. These assumptions we shall presently state.

"Two bodies of unequal weight (say a guinea and a feather) are placed at the same height under the exhausted receiver of an air-pump. When released, they are observed to reach the bottom of the vessel at the same instant of time, or, in other words, to fall in equal times. From this fact, it is inferred that a repetition of the experiment, either with these bodies or with any other bodies, would be attended with the same result, and that, if it were not for the resistance of the atmosphere and other impeding circumstances, all bodies, whatever their weight, would fall through equal vertical spaces in equal times. Now, that these two bodies in this particular experiment fall to the bottom of the receiver in equal times is merely a fact of observation, but that they would do so if we repeated the experiment, or that the next two bodies we selected, or any bodies, or all bodies, would do so, is an inference, and is an inference of that particular character which is called an **Inductive Inference,** or **Induction.**"[1]

4. Processes Subsidiary to Induction.

There are several processes connected with induction and subsidiary to it. These are as follows:

(1) **Observation.**—By observation we carefully note phenomena. I observe that two bodies fall to the ground with different velocities. I observe that a coin is heavier than a feather. These are simple facts of observation and, uninterpreted, they have little significance.

(2) **Experiment.**—Experiment involves an intentional combination of phenomena, in order to observe them under new conditions. I exhaust the air from a receiver and then drop a coin and a feather in it, in order to see what

effect the changed conditions will have. This affords new facts. Science really begins when experiment, or analytical observation, takes the place of simple observation.

(3) **Hypothesis.**—Hypothesis is a theory, or supposition, provisionally employed as an explanation of phenomena.[1] It is necessary as a directing idea in the conduct of experiments. The invention of hypotheses is one of the most important functions of Scientific Imagination. The principal test of the truth of an hypothesis is its adaptation to explain all the facts. When it does not explain the facts, it must be modified or abandoned.

(4) **Verification.**—This consists in proving the truth of an hypothesis by applying it to all the attainable facts and so discovering that what was an hypothesis in thought is actually a law of things. Every process of verification assumes certain principles which we shall now state.

5. Assumptions of Inductive Inference.

In order to render induction valid, two assumptions must be made:

(1) **That every event has a cause.** This is the Law of Universal Causation; and

(2) **That the same causes will always produce the same effects.** This is the Law of the Uniformity of Nature.

If I infer that all bodies acted on by gravity alone fall in equal times, it is because every event of this kind,—the falling of a body,—requires a cause, gravity, and because this cause always acts uniformly. If such an event could happen without a cause, or if the same cause did not always produce the same effect, I could make no inference whatever. No induction, then, is possible, except upon these assumptions.

6. Deductive Reasoning.

Deduction is the inference of a conclusion by the application of a general truth to a particular case. The principle underlying all deductive reasoning was laid down by Aristotle and is known as **Aristotle's Dictum:** "Whatever is predicated, or asserted universally, of any class of things, may be predicated of anything comprehended in that class." The validity of this mode of reasoning, then, depends upon our knowledge of general, or universal judgments. From the premises

All wood is a vegetable product;
This substance is wood;

I may infer the conclusion,

This substance is a vegetable product.

If, however, I cannot assert that "*All* wood is a vegetable product," but only that "*Some* wood is a vegetable product," I can infer nothing.

7. Origin of Universal Judgments.

The question, How are general, or universal, judgments obtained? has given rise to much discussion. The following theories have been held:

(1) The **Inductive** Theory.—This derives all general judgments from induction. Even such propositions as, "Every event has a cause," are, according to this theory, derived from induction. This is the position of **J. S. Mill.**[2] To this view it may be objected (1) that no number of particular instances, without a universal element, would warrant a general law, and (2) that every process of induction assumes general principles to begin with.

(2) The **Hereditary** Theory.—This view regards general judgments as derived from the experience of past generations, being transmitted as inherited tendencies to regard certain propositions as universal, because they have never been contradicted in experience. The theory differs from the exploded doctrine of innate ideas, in regarding the *tendency*, not as an actual form of knowledge, but as an inherited disposition. This is the position of **Herbert Spencer.**[3] The objections to it are (1) that it simply removes the difficulties a little farther back, for the first induction could not have proceeded without general judgments, and (2) even the total experience of the human race does not show that a judgment is really universal and necessary. It fails, then, to give a firm foundation to reasoning.

(3) The **Intuitive** Theory.—According to this view, certain fundamental principles are regarded as known by *intuition* (from the Latin *in*, in or on, and *tueri*, to look). Such principles are variously called "intuitions," "primary beliefs," "first truths" and "constitutive principles." Unless the mind begins with such intuitions, it is difficult to comprehend how any process of reasoning is possible. They are more fully considered in the treatment of Constitutive Knowledge, to which they belong.[4]

The origin of **mathematical axioms** has occasioned much controversy, and affords a field for illustrating the rise of certain general truths. These propositions are not derived by induction from particular cases, but are seen at once to be true in any case. They do not, indeed, come into consciousness until we set about formulating mathematical proofs, but they are implied in all our mathematical thinking, and have a character of self-evidence and necessity which is known as soon as we think about them. The same is true of many other principles. Our best description of the way in which such principles are known is to say that they are known intuitively,

or by direct insight. We cannot speak of them as "innate," for that would imply that they exist in the mind at birth as forms of knowledge, whereas they come into consciousness only in the course of experience. They cannot be proved, either inductively or deductively, because there is nothing more evident from which they could be proved, and they must be assumed in every possible form of proof. It must be remembered, however, that in nearly all processes of deductive reasoning, we employ universal judgments which we have derived from induction, and which have only that degree of probable truth that the extent of our induction warrants.

8. Two Forms of Expressing Deduction.

There are two ways in which a deductive argument may be expressed. They are :

(1) The **Explicit,** or **Syllogistic.**—This is the full and logical form of statement, and is best adapted for the ready application of the tests which are employed by logicians to determine the validity or invalidity of an inference.

(2) The **Implicit,** or **Enthymematic.**—This is an abbreviated form of expression, in which one of the judgments, or premises, is suppressed, (*a*) because it is too evident to require expression, or (*b*) to avoid attracting attention to it and thus exposing a fallacy. It is the form in which arguments are usually stated in connected discourse.

As the persons who use this text-book are presumed to have studied Logic, it is unnecessary to enter into details concerning the forms of reasoning. The psychological interest terminates when the processes of reasoning have been described and the validity of correct reasoning is shown. If the reasoning be correct, and the premises are true, the conclusion is true. In the sphere of merely probable judgments, the conclusion has the same degree of probability as the two premises taken together. The trustworthiness of all reasoning depends upon the relations of real beings implied in the premises. Most fallacies result from false premises.

9. Systematization.

The highest product of reasoning is a **System,** or coherent whole, in which truth is unified. A perfect system would fulfill the following requirements:

(1) All the facts must be **included;**

(2) All the facts must be **harmonized,** so that no contradiction exists between them;

(3) All the facts must be **arranged** according to their natural affinities.

Every science aims to meet all these requirements so far as its limited complement of facts is concerned. It includes, harmonizes, and arranges the facts, however, with growing clearness and certainty, and this is what is meant by the "growth of science." That **all truth is harmonious,** is believed by every intelligence that has faith in the intelligibility of the universe. We have not yet arrived at a final system in which all knowledge is unified. If such a system existed in the consciousness of any man, it is doubtful if any existing language would furnish an adequate expression for it. With the progress of knowledge there may be a corresponding improvement in language, so that fixed definitions and divisions may be universally acceptable and without contradiction.

10. The Relation of Reasoning to Education.

Reasoning marks the culmination of all the intellectual powers. To be able to reason correctly at all times and on all subjects, would imply the perfect discipline of the faculties and the conformity of the whole mind to the laws of thought. It constitutes, therefore, in a certain

sense, the goal of purely intellectual development. We shall consider here: (1) what studies furnish most aid to the discipline of Reasoning power; (2) what conditions arise from the use of language as an instrument of Reasoning; and (3) what limits to Reasoning are fixed in the constitution of the mind.

(1) **Disciplinary studies.**—No doubt all close observation of the forces of Nature in their regular operation tends to improve our power of reasoning, for we thus acquire a facility in inferring from a given event what will follow by Nature's logic of cause and effect. The helpful influence of close observation is much increased when we strive to detect a principle in the facts, a law in the phenomena. This is Induction. Inductive reasoning finds its best exemplification and opportunity in the sphere of the experimental sciences, such as Chemistry, Physics and Physiology, when pursued as branches of investigation. They ought to be pursued inductively, not taught as closed and finished systems. Deductive reasoning, on the other hand, is best cultivated by the study of Pure Mathematics, in which the processes are mainly deductive and the methods rigidly logical. The union of the two is found in the sphere of Applied Mathematics, where the deductive method of abstract reasoning is blended with the conditional forms of practical calculation. Logic, being the science of reasoning, has great value in improving our reasoning powers, but if we are to profit much by it we must apply it practically until its principles are clearly apprehended and fully illustrated. As one may repeat all the rules of syntax without speaking correctly, so one may repeat all the rules of the syllogism without reasoning correctly.

(2) **The instrument of Reasoning.**—Nearly all the actual reasoning of men is carried on with the aid of language as its instrument. Instead of things, we have before the mind words, or symbols of things. We treat these according to the rules of Logic, as if they were the realities of thought. The traditional Logic inherited from Aristotle deals with "terms" and "propositions" rather than with things and judgments. Some logicians, as Whately,[5] regard Logic as wholly conversant about language; and some philologists, as Max Müller,[6] identify thought and language. Words certainly abbreviate and facilitate mental combinations, and many of these would be impossible without words. We can assert and infer some things of a figure with a thousand sides; as, for example, that it is not a circle and that it approaches nearer to a circle than a square, and yet no one can form a mental image of such a figure. But language often seriously affects the validity of reasoning. Ambiguous words and abstract words treated as if they were things are two fertile sources of error in reasoning. It is the duty of the teacher to point out these pitfalls in the path of reasoning and to show that valid thinking depends upon the relations of realities, not upon the relations of verbal signs.

(3) **The limits of Reasoning.**—It is necessary to make plain to the learner that reasoning is confined within certain limits. It is difficult for the young mind that has not analyzed its own powers to believe that there is any truth that is not the result of reasoning, and it is characteristic of such minds to push the question, "Why?" beyond the patience of maturer minds. Children want a *reason* for everything. Companionship with them very soon shows

us the limits of reasoning. When we come to analyze the process of reasoning, we discover that it consists simply of re-stating what is already implied in previous knowledge. At the basis of all reasoning lie the primary affirmations and immediate experiences without which reasoning itself would have neither validity nor materials. The process of reasoning is merely a relating activity of the mind, harmonizing and unifying various forms of knowledge,—the materials, so to speak, with which it deals. These materials are furnished by our experience and by the constitution of our nature that renders experience possible. This constitution we can examine and describe, but it presents to us *ultimate facts and principles* beyond which Intellect cannot penetrate. Such an examination and description are attempted in the next chapter, on Constitutive Knowledge.

In this section, on "Reasoning," we have considered:

1. ***Definition of Reasoning.***
2. ***The Assumptions of all Reasoning.***
3. ***Inductive Reasoning.***
4. ***Processes Subsidiary to Induction.***
5. ***Assumptions of Inductive Inference.***
6. ***Deductive Reasoning.***
7. ***Origin of Universal Judgments.***
8. ***Two Forms of Expressing Deduction.***
9. ***Systematization.***
10. ***The Relation of Reasoning to Education.***

REFERENCES : (1) Fowler's *Inductive Logic*, p. 3. (2) Mill's *System of Logic*, Book III., Chapter IV. (3) Spencer's *Principles of Psychology*, Part IV., Chapter VII. (4) Porter's *Human Intellect*, pp. 497, 526. (5) Whately's *Elements of Logic*, Book II., Chapter I., Section 2. (6) Max Müller's *Science of Thought*, I., p. 30.

CHAPTER IV.

CONSTITUTIVE KNOWLEDGE.

DEFINITION AND DIVISION OF CONSTITUTIVE KNOWLEDGE.

Constitutive knowledge is the knowledge that is acquired by an examination of those postulates, or assumed truths, which are involved in all our intellectual experience. A postulate (from the Latin *postulāre*, to demand) is a truth demanded by the mind in order to explain its experiences. It is not so much a product of experience as it is a pre-condition of experience; for, though it is brought to our consciousness only *in* experience, it is necessary to the possibility of experience. More explicitly, in order *to know*, the knowing subject must have a certain constitution that enables it to know; and, in order *to be known*, the known object must have a certain constitution that enables it to be known. We now pass to an examination of this fourth kind of knowledge. In organizing percepts, we saw (page 58) that our sense-impressions are referred to the four relations of (1) **Being,** (2) **Cause,** (3) **Space** and (4) **Time.** These we found also to constitute the leading Categories of Judgment (page 156). We have now to ask what we know about these categories, or forms of predication, underlying all our other knowledge. We have noted successive stages of intellectual activity appearing in an unfolding order from simple sensation up to reasoning, that is, a **Development of Intellect.** This also

requires some examination. These five topics, then, will be the subjects of the sections in this Chapter.

At this point begins the transition to what is usually called **Ontology**, or **Metaphysics** (see page 2). It is the inevitable culmination of Psychology. It is also the dividing-point of the **schools of philosophy.** It is necessary here, without entering upon a full discussion, to explain the psychological origin of these schools.

Empiricism (from the Greek *εμπειρία, empeiria,* experience), regards nothing as true or certain except what is given in experience. We can, therefore, know nothing of the realities, if any exist, outside of, or beyond, experience. **Locke** and his followers, advocate Empiricism and are called "Empiricists" and their methods "Empirical." It has been the favorite view in English and French thinking, though not without important exceptions.

Transcendentalism (from the Latin *transcendĕre,* to go beyond, to surpass) regards experience as impossible without certain preconditions which go beyond, or surpass, experience and render it possible. In order to know, there must be certain faculties of knowing with a specific nature and constitution. **Kant** and his followers are representatives of Transcendentalism. Kant holds that there are in the soul certain *a priori* principles of knowledge not derived from experience, but necessary to it. The Scotch philosophers have held, for the most part, a similar view of "first principles," but have repudiated the name "Transcendentalism," preferring the less pretentious term, "Common Sense." The words "Transcendentalism" and "Empiricism" are used with various shades of meaning difficult to discriminate within narrow limits, and the learner will do well to use them with caution, and will be safer not to use them at all. For the use of the word "Transcendentalism" as applied to the views of Ralph Waldo Emerson and other American thinkers, see the exposition of their doctrines in Frothingham's "Transcendentalism in America." The word "intuition" also had a peculiar meaning for this coterie of thinkers.

Sensationalism is another designation frequently applied to the doctrine of Empiricism, because those who have held the empirical view have usually tried to derive all knowledge from mere sensation, as **Hume** and **Mill,** for example, without admitting the constitution of the mind itself as a source of knowledge.

Rationalism is the opposite doctrine, finding the ultimate explanation of knowledge in the constitution of "Reason," and regarding sensation as merely the material of knowledge for which Reason supplies the forms.

In a **broad classification of systems,** we may form two antithetical groups:

(1) **Empiricism, Sensationalism** and **Associationism** usually go together and are only different names for the same way of thinking. Knowledge is supposed to begin in sensation, to consist of nothing but "transformed sensation" and to be worked up into its special forms by association of ideas.

(2) **Transcendentalism** and **Rationalism** are also different names for the same general doctrine. Both terms indicate a claim to knowledge of something beyond experience. This may be expressed as "*a priori* knowledge," "first principles," "primary principles," "primitive beliefs," "first truths," "intuitions," "constitutive principles," etc. The general meaning is the same. Transcendentalists and Rationalists regard the soul as possessing specific faculties, or powers of knowing, and so having a definite constitution.

Without entering farther into the discussion of these differences, we shall proceed to the examination of the necessary postulates of knowledge.

SECTION I.

BEING.

1. The Reality of Being.

The reality of Being is affirmed in the first primary affirmation of the soul, "Something *is*." It is the necessary correlate of knowledge. The reality of Being is incapable of proof, for it is the condition on which all proof rests. The denial of it is also impossible, for the affirmation of its non-existence would have no rational foundation. In every act of knowledge we have an *intu-*

ition of Being. From such separate experiences we form also a *concept*, or abstract idea, of Being, which is the most universal positive notion that we can form. From the intuition of Being we formulate three **laws of thought** which constitute the basis of all reasoning, as follows:

(1) **The Law of Identity,** Whatever is, is;

(2) **The Law of Contradiction,** Nothing can both be and not be;

(3) **The Law of Excluded Middle,** Everything must either be or not be.

These laws of thought constitute the foundation of Logic, which is the science of the laws of thought. Upon them are based the Canons of the Syllogism and the Rules of the Syllogism, as given by writers on Logic. They are fully discussed in all the better works on this subject, and a full explanation may be found in "The Elements of Logic," published by Sheldon and Company, pp. 104, 123.

2. Substance and Attribute.

Substance is the constitutive condition of all experience, for that which experiences and that which is experienced must *be*. Differences which are known in consciousness and are attributed to Being, are **attributes** of Being. Whatever is known is known under the relation of *substance and attribute*. Attributes are apprehended in experience, are the phenomenal elements of it, and are necessarily referred to substance as the reality of which they are manifestations.

"The idea," says **Locke,** "to which we give the name of *substance*, being nothing but the supposed but unknown support of the qualities we find existing, which we imagine cannot subsist, *sine re substante*, without something to support them, we call that support *substantia;* which, according to the true import of the word, is, in

plain English, standing under or upholding."[1] That we do universally refer every attribute to a substance, is undisputed among philosophers. They have, however, given opposite accounts of it and reasons for it. Locke, Berkeley, Hume, and the two Mills consider the idea of substance as a mere artifice of the mind. They hold, then, to **Phenomenalism**, the doctrine that we know phenomena, or appearances, only. The connection of Phenomenalism and Nominalism has been already pointed out. The weakness of Phenomenalism is precisely that of Nominalism. It lies in ignoring outward reality. An object is the *sum* of all its qualities. Some of these are known, others are unknown. The substance of a thing is that reality a part of which we apprehend through its attributes as known by us and some of whose qualities may be unknown to us. If we knew *all*, substance would be entirely disclosed. Substance and attributes are in reality inseparable. We mentally separate one or more attributes from the others, which together with them constitute a thing, by the process of abstraction. The doctrine of Relationism requires us to refer every attribute to the other qualities with which it is associated and to consider them *all* as real in their concrete combination. The distinction between substance and attribute is thus a simply relative one, but essential to the mind's activity. **Kant** distinguished between *Phenomena* (attributes as appearing to us) and *Noumenon* (substance not manifested to our knowledge). Here is the great weakness of his system; for, if phenomena are products of the mind created by its inherent forms, as he holds, how do we know that there *is* any noumenon, or objective reality? If there is objective reality, why should all differences of quality and quantity be referred, as he refers them, to *the forms of the mind?* Relationism affords more solid ground, affirming that the qualities of a thing exist where the thing exists, and, taken in their totality, constitute it.

3. Two Kinds of Being.

As our knowledge of Being is obtained through its attributes, we are warranted in distinguishing as many kinds of Being as there are antithetical and inconvertible groups of attributes. These are two:

(1) **Matter,** having the attributes of space-occupancy, impenetrability and sense-presentation ; and

(2) **Spirit,** having the attributes of self-conscious intelligence, sensibility and volition.

These two groups of attributes are both antithetical and inconvertible.

As **examples of their antithesis** take the following : Matter is not known to possess intelligence, sensibility, or volition. No chemical synthesis has succeeded in so combining the elements of matter as to endow them with these powers. On the other hand, spirit is not known to fill any portion of space, though it has location in a bodily organism. No material element is known to be lost when the spirit leaves the body. Spirit is not known to be impenetrable ; but, on the contrary, the greater the number of ideas possessed by the soul, the greater the number it is capable of receiving. The states of the self-conscious spirit, such as hopes, joys, fears, desires, concepts, etc., are not known as occupying space, or as being capable of sense-presentation.

The **inconvertibility** of the two groups of attributes is admitted by all eminent thinkers. The physical forces, —heat, light, electricity, chemical action, gravity, and probably nervous force,—are convertible into one another; so that, beginning with any one, the others can be produced. Thought, feeling and volition are *not* thus correlated with the physical forces. Not only has the experimental production of any form of consciousness been thus far impossible, but, as Tyndall says : "The passage from the physics of the brain to the corresponding facts of consciousness is *unthinkable.*" [2]

By the tests of antithesis and inconvertibility, there-

fore, we distinguish matter and spirit as different kinds of Being.

This distinction is not like that by which the chemist discriminates between two elements, such as oxygen and hydrogen. The difference in that case is one of combining power, in the case of matter and spirit it is one of *kind*. We have no scientific warrant for effacing the distinction marked, as it is, in every literature, universal in human speech and fundamental in all thought. The theorist may, indeed, go farther and say that, in the *unknown* reality of both mind and matter there *may be* a unity that is beyond our penetration. This is possible, but it is mere *hypothesis*, it is not *science*. We are not, therefore, prepared to teach it as science when even the most eminent physicists would object to this identification of mind and matter. In the present state of science, **Dualistic Realism is, therefore, Scientific Realism. Monism,** in every form, is mere hypothesis. When mind and matter can be identified experimentally by making matter conscious in the laboratory, or even in conception by rendering the attributes of the one intellectually translatable into the attributes of the other, Monism will be established, but not until this is done. It would then assume the form of **Idealism,** if all were resolved into mind; of **Materialism,** if all were resolved into matter. **Agnostic Monism** is simply a learned expression of the inability to effect this resolution and is essentially *non*-scientific, introducing a term of ignorance in the place of knowledge.

4. Quantity.

Quantity (from the Latin *quantum*, how much) involves the distinction of *more or less*. It may be applied to any thing that admits of degree, that is, to any thing that is measurable. A line, a surface, or a magnitude is described as having quantity. A force also, like steam-power, has quantity, although we cannot assign it dimensions. We measure it by a unit of intensity, not by a unit of magnitude. We have then, (1) **extensive** quantity, or quantity in *space*, and (2) **intensive** quantity, or quantity

in *power*. We may add also (3) **protensive** quantity, or quantity in *time;* as when we compare minutes and hours, days and weeks.

5. Quality.

Quality (from the Latin *qualis,* of what kind) involves the distinction of *kind.* The quality of a thing is that which constitutes its difference from things of other kinds. Intellect, as discriminative activity, is chiefly occupied with qualities.

6. Modality.

Modality (from the Latin *modus,* manner) involves the distinction of *manner* of existence. Water may be liquid, solid or gaseous; wax may be liquid, plastic or solid. These are *modes* of being.

7. Number.

Unity (from the Latin *unus,* one) involves the idea of *oneness.* Unity is opposed to **plurality** (from the Latin *plus,* more). The world of things presents to us *individuals,* that is, numerical units, and yet is itself *one,* that is, a *whole,* or system in which unity underlies the apparent diversity of phenomena. It is this recognition of the *one in the many* that has given rise to the idea of the *universe* (from the Latin *unus,* one, and *versum,* turning, implying that all turns about one centre, or is a unit).

Number involves (1) the establishment of a unit and (2) a process of counting. "Number," says **Bowne,** "seems to adhere so closely to the objects that to know them seems to be the same as knowing their number. Yet this, again, is only the old error which identifies plurality in experience with experience of plurality. The very

utmost that could be allowed would be that unity inheres in the object; the conception of plurality arises only as the mind takes the separate units together. Until this is done, we have not number, but the unit repeated; the countable, but not the counted. Each object may be one; but no object is two or three, etc. The clock may strike one repeatedly, but by no possibility can it do more. Our ears might give us the separate strokes, but they cannot hear their number. Hence we pass from units to number only by a process of counting, or of adding unit to unit. Number is no property of things in themselves, but only of things united by the mind in numerical relations."[3] (3) That counting is a mental process, is evident from the remark of the half-intoxicated man who heard the clock strike three and said, "That clock must be greatly out of order, it has *struck one three times!*" Unity may in the same way be regarded as depending upon the manner in which the mind regards objects. A tree is one tree really and objectively as well as mentally, and ten trees are ten trees in like manner, but the mind may contemplate the one tree as composed of a hundred branches or of ten thousand twigs. The relations of number always belong where the things are, for "number" is essentially an abstraction. For this reason we have the infinitely small as well as the infinitely large. Taking any unit, it is possible to divide and subdivide it mentally without limit. This simply signifies that the act of mind may be repeated without end, and here lies the solution of many logical puzzles. If one mental process gets the start of another, as in the famous case of Achilles and the tortoise, the belated one can never overtake the other without violating the conditions, but in reality Achilles leaps over the tortoise in the first few steps.

8. Relation.

Relation (from the Latin *re,* back, and *latum,* bearing) involves a *reference* of one thing to another. This reference is based on a real connection or disposition of things as they are apprehended by us. **Identity** is *sameness* of substance. Relations of **equality** exist when things are *equal* in quantity. Relations of **resemblance** indicate a *likeness* between qualities of things. Relations of **co-**

existence and relations of **succession** are also noted in our apprehension of things. Relations are not *things* and yet they are real. They are the *connections* which unite individual things into higher unities. It is through them, as we have seen, that reasoning is rendered valid.

The **relativity of all human knowledge** is affirmed by **Hamilton** and many other thinkers. He says, "In enouncing relativity as a condition of the thinkable, in other words, that thought is only of the relative, this is tantamount to saying that we think one thing only as we think two things mutually and at once; which again is equivalent to a declaration that the Absolute (the non-Relative) is for us incogitable and even incognizable."[4] "In this," he says, "all philosophers are at one." It is true that the process of knowledge is a process of relating, and that nothing can be known that is out of all relation to every thing else, including the knowing subject. But it is a mistake to identify the Absolute with the non-Relative. Such an Absolute has never been thought about by any one, for the reason that it is impossible to think about it. But the real Absolute is that which is not in a relation of *dependence*. The Absolute is the self-sufficient, the self-subsisting, not the "non-Relative." Hamilton and his follower, **Henry L. Mansel** (1820–1871), who fell into Hamilton's error in his "Philosophy of the Conditioned" and "Limits of Religious Thought," in identifying the Absolute with the non-Relative, create difficulties which have puzzled many minds and enlightened none. There is no real opposition between the relative and the Absolute. In thinking of Creator and created at the same time, we bring the two into relation, a relation of *causality* on the part of the Creator and of *dependence* on the part of the created. Thus the relative and the Absolute are related in thought and may be in reality. **Herbert Spencer** is in this direction a follower of Hamilton to a certain extent, but has thus demonstrated the existence of the Absolute, although he holds that we cannot know its nature: "Observe in the first place, that every one of the arguments by which the relativity of our knowledge is demonstrated, distinctly postulates the positive existence of something beyond the relative. To say that we cannot know the Absolute, is, by implication, to affirm that there is an Absolute. In the very denial of our power to learn what the Absolute

is, there lies hidden the assumption that it is; and the making of this assumption proves that the Absolute has been present to the mind, not as a nothing, but as a something. Similarly with every step in the reasoning by which this doctrine (the relativity of knowledge) is upheld. The noumenon, everywhere named as the antithesis of the phenomenon, is throughout necessarily thought of as an actuality. . . . If the non-Relative or Absolute is present in thought only as a mere negation, then the relation between it and the relative becomes unthinkable, because one of the terms of the relation is absent from consciousness. And if this relation is unthinkable, then is the relative itself unthinkable, for want of antithesis: whence results the disappearance of all thought whatever."[5]

9. Infinity.

Infinity (from the Latin *in*, not, and *finis*, end or limit) involves the *absence of limit*. "*The Infinite*" has been represented by Hamilton and others as a "negative notion," and so it is, the same as "*The Quantity*" would be if there were no positive content. But, starting with an intuition of Being, *we have a positive content*. Do we reach a "negative notion" when we think away all limits, or do we retain our positive object of intuition, Being, now thought of as Infinite? Certainly we have not destroyed the *content* of Being in thinking away the *limits*. We cannot, indeed, *comprehend*, or know as a *whole*, Infinite Being; for a whole implies quantity, and no *quantity* can be infinite, for quantity involves the distinction of *more or less*. We may, however, say that we apprehend Infinite Being, that is, we apprehend Being without the ability to fix any limits whatever. Being transcends our power of *representation* as soon as we drop the limits that bound its finite forms, but not our power of *conception*. We can conceive of Being as possessing *qualities*, irrespective of quantity; but we cannot repre-

sent such Being, for the very act of representation is a limitation. If, having thus conceived Being, we stop short of representation, what have we? Infinite Being.

Herbert Spencer has expressed his view upon this point as follows: "Our notion of the limited is composed, first of a consciousness of some kind of Being, and secondly of a consciousness of the limits under which it is known. In the antithetical notion of the unlimited, *the consciousness of limits is abolished; but not the consciousness of some kind of Being.* It is quite true that in the absence of conceived limits, this consciousness ceases to be a concept properly so called; but it is none the less true that it remains as a mode of consciousness. If, in these cases, the negative contradictory were, as alleged (by Hamilton), 'nothing else' than the negation of the other, and therefore a mere *nonentity*, then it would clearly follow that negative contradictories could be used interchangeably; the unlimited might be thought of as antithetical to the divisible; and the indivisible as antithetical to the limited. While the fact that they cannot be so used, proves that in consciousness the unlimited and the indivisible are qualitatively distinct, and therefore positive and real; since *distinction cannot exist between nothings.* The error (very naturally fallen into by philosophers intent on demonstrating the limits and conditions of consciousness) consists in assuming that consciousness contains *nothing but limits and conditions;* to the entire neglect of that which *is* limited and conditioned." [6]

An American philosophical writer, **George S. Fullerton** (1859–), in his work on "The Conception of the Infinite," has shown that the idea of the Infinite is not *quantitative* but *qualitative.* He thinks it possible to form a true concept of the Infinite. "The Infinite," however, is something very abstract and, without positive contents, is not very significant for thought, even if the concept can be formed. Unless this concept of "The Infinite" is filled with *real contents,* it seems to have only a speculative value. If, however, the view presented in the text above be correct, and the validity of a concept of "Infinite Being" is also accepted, the doctrine of Relationism (pages 145, 146) would admit an Infinite Being into our practical as well as our theoretical interests. Calderwood's "Philosophy of the Infinite" may be recommended as an able treatment of the subject.

In this section, on "Being," we have considered:-

1. ***The Reality of Being.***
2. ***Substance and Attribute.***
3. ***Two Kinds of Being: (1) Matter and (2) Spirit.***
4. ***Quantity.***
5. ***Quality.***
6. ***Modality.***
7. ***Number.***
8. ***Relation.***
9. ***Infinity.***

REFERENCES: (1) Locke's *Essay Concerning Human Understanding*, Book II., Chapter XXIII. (2) Tyndall's *Fragments of Science*, p. 121. (3) Bowne's *Introduction to Psychological Theory*, pp. 153, 154. (4) Hamilton's *Lectures on Metaphysics*, p. 689. (5) Spencer's *First Principles*, pp. 88, 91. (6) *Id.*, p. 90.

SECTION II.

CAUSE.

1. Various Senses of the Word "Cause."

The general idea of a "**Cause**" is that without which an event called the "Effect" cannot be. **Aristotle** distinguished four kinds of causes: (1) **Efficient** Cause, the agency by which a change is produced; (2) **Final** Cause, the directing idea, or end for which an act is performed; (3) **Material** Cause, the substance of which any thing is made and without which it could not be; and (4) **Formal** Cause, the plan that is embodied in what is done. We may simplify our discussion of the subject by confining ourselves to efficient and final causes; for material cause is some kind of substance, and formal cause is a result of final cause as a directing idea.

2. Opinions on the Nature of Efficient Cause.

Various opinions have been held concerning the nature of efficient Cause, and it is important that these should be stated.

(1) **Resolution of Cause into Antecedent and Consequent.**—According to **Hume,** and he is followed by the Associational School generally, our idea of Cause is nothing but a connection established in the mind by the association of ideas,—antecedents in time being taken as causes, and consequents in time being regarded as effects. In this view, phenomena are considered as having no necessary tendency to produce one another and every thing beyond mere phenomena is denied. If this doctrine were true, day ought to be regarded as the cause of night and each preceding letter in the alphabet as the cause of the following one.

Hume states his doctrine thus: "When one particular species of events has always, in all instances, been conjoined with another, we make no scruple of foretelling one upon the appearance of the other and of employing that reasoning which can alone assure us of any matter of fact or existence. We then call the one object Cause, the other Effect." He then goes on to point out that a number of instances differ from a single instance in nothing but the power to create a habit of thought in us, so that we come to think of things conjoined in time as sustaining the relation of cause and effect, "a conclusion," he admits, "which is somewhat extraordinary, but which seems founded on sufficient evidence."[1]

J. S. Mill attempts to improve the doctrine of Hume as follows: "Invariable sequence . . . is not synonymous with causation, unless the sequence, besides being invariable, is unconditional."[2] He defines "unconditional" as "subject to no other than negative conditions," and explains that "negative conditions . . . may all be summed up under one head, namely, the absence of preventing or

counteracting causes."[3] Mill seems to be unable to state the case without involving the unexplained idea of "cause."

(2) **Resolution of Cause into Subjective Experience.**—A French philosopher, **Maine de Biran** (1766–1824), advanced the doctrine that, as active agents, we have an immediate knowledge of efficient cause in our own conscious acts, from which we infer that all events have efficient causes. It cannot be denied that we consciously cause certain acts, but this alone does not warrant us in concluding that all external phenomena are produced in like manner. Such an inference would be an act of induction, and no process of induction is valid unless the Law of Universal Causation is assumed (see page 164). The reasoning, then, is in a circle.

While the doctrine of **De Biran** does not explain our knowledge of causation, **it serves to refute the position of Hume**, for it gives us knowledge of causes in actual experience. This, of course, Hume denies, but he also denies many other facts well attested by the common consciousness and capable of being tested by any individual consciousness. Each one must determine for himself whether or not he is consciously causative in the sense intended.

(3) **Resolution of Cause into a Relation of Concepts.—Kant** and other German philosophers have resolved Cause into a mere form of thought imposed by the mind itself, and not existent as a relation between things. It thus becomes merely a necessary relation of concepts. We must think of causes, although they may not really exist. Here Kant's characteristic reference of Being to the forms of Knowing, instead of regarding Knowing as a correlate of Being and dependent upon it, is again manifested, as it is also in his treatment of Time and Space. Whoever

has accepted the doctrine of Relationism (pages 145, 146) will have no difficulty in seeing that the relation of cause and effect must exist where things exist.

Kant says: "In order that this (the relation of phenomena) may be known as determined, it is necessary to conceive the relation between the two states in such a way that it should be determined thereby with necessity, which of the two should be taken as coming first, and which as second, and not conversely. Such a concept, involving a necessity of synthetical unity, can be a pure concept of the Understanding only, which is not supplied by experience, and this is, in this case, the concept of the *relation of cause and effect*, the former determining the latter in time as the consequence, not as something that by imagination might as well be antecedent, or not to be perceived at all." [4]

(4) **Resolution of Cause into an Impotency of Mind.—Hamilton** advances a singular explanation of the idea of Cause. He holds that, having once thought of Being, it is impossible to think of it as not existing. It must be thought of as existing in time. We cannot, therefore, think of it as not existing in any period of past time or any period of future time. Thus we have a certain complement of Being that could not have originated from nothing and cannot be annihilated in thought. The phenomena presented in this complement of Being at any time can, therefore, be thought of only as modifications of the phenomena of past time. The present phenomena we call "effects" and the past phenomena "causes." Our idea of Cause thus results from *our inability to think of Being as non-existent*. The idea of Cause, however, is essentially that of *efficiency*, or productive power, in Being. It is Being *in action*. Being might exist without becoming the cause of anything. Hamilton's exposition is

simply a very awkward way of saying that we cannot think of something as derived from nothing, which is better expressed in the words, *"Every event has a cause."*

Hamilton says: "When we are aware of something which begins to be, we are by the necessity of our intelligence constrained to believe that it has a cause. But what does the expression, 'that it has a cause,' signify? If we analyze our thought, we shall find that it simply means that as we cannot conceive any new existence to commence, therefore, all that now is seen to arise under a new appearance had previously an existence under a prior form." *"Ex nihilo nihil, in nihilum nil posse reverti,*—'Nothing can arise from nothing, nothing can return to nothing,'"—expresses in its purest form the whole intellectual phenomenon of causality.[5]

(5) **Resolution of the idea of Cause into an Intuition.**—The Scotch philosophers generally since **Reid** have considered the idea of Cause as an intuition. It is intuitively known that every event must have a cause, that is, something has efficiently produced it. Of conditions, some are *passive.* These may be called **"occasions."** Others are *active,* and these may be called **"causes."** If a runaway horse kills a child in the street, the child's being in the way is the *occasion* and the blow from the horse is the *cause* of its death. All we can say is, that we know intuitively that **every event must have a cause,** and all our experience exemplifies this truth. The knowledge of causality does not, however, arise *before* but *in* experience.

It will not do to say that causation is simply a form of intelligence and not also a law of things. So far as we have knowledge of things, the law applies to them. We assume it in our earliest as well as in our latest mental activities, and expect to find a cause even for those events which seem inexplicable. Causality seems to be a structural law of both mind and matter. It is like a law of thought, perfectly obvious and undeniable the moment it is stated. It is not

necessary to know *how* we can know a universal law, in order to be sure of it. The conviction lies deeper than all the processes of knowledge. Those who have sought to weaken confidence in the reality of causation have themselves always assumed it. The case is excellently stated by **Bowne**: "All the manifold 'explanations' which Sensationalism has vouchsafed to a long-suffering world consist in showing how antecedent mental states must *determine* new mental states, according to the laws of association; and as for sensations, most Sensationalists have had no hesitation in referring them to external causes without scruple, or even suspicion of the inconsistency. Concerning any conception of our mature life, we are warned against taking it as an *original* mental fact. We are told how it came about as a deposit of experience, either in us or in our ancestors. If a suggestion of freedom is made, it is frowned upon forthwith as one of the most unscientific ideas possible, if not a trace of an antiquated superstition. But if Sensationalism be admitted, all this is hopelessly inconsistent. No idea is, or is as it is, *because* any other idea was; rather some ideas were and some other ideas are. . . . . If anything is or occurs, we must not ask why; for there is no why! Thus all the explanations of Sensationalism disappear, and by sheer excess the doctrine cancels itself."[6]

3. Final Cause.

Final Cause (*causa finalis*) is thus explained by Aristotle: "Another sort of cause is the *end*, that is to say, that *on account of which* the action is done; for example, in this sense, health is the cause of taking exercise. Why does such a one take exercise? We say it is *in order* to have good health; and, in speaking thus, we mean to name the cause." It is the final cause that is inquired after in the question, *what for?* Efficient causes are regarded as determining present effects from the *past;* that is, my previous strength is the efficient cause of my taking exercise, without which I could not take it. Final causes are regarded as determining present effects through rela-

tion to the *future*, that is, I would not take the exercise, if it were not for the health I hope to gain by it. As Kant has expressed it, final cause involves "the predetermination of the parts by the idea of the whole."

4. The Principle of Final Cause.

The maxim, "*Every being has an end*," was stated by the French philosopher, **T. S. Jouffroy** (1796–1842), as a constitutive principle, co-ordinate with the principle of Causality. It seems better to regard it as a special case under that principle. Adaptations are among the common phenomena of experience. They surround us on every side. They are effects, and must be referred to adequate causes for their explanation. They are simply a special class of effects. They differ from other effects in implying that in the production of one object, as for example the human eye, there was a combination of efficient causes with reference to something other than itself, as for example light, so that vision is the result of the adaptation. This combination is what needs to be explained, and requires a cause capable of foreseeing and providing for the end to be attained.

It is said by some philosophers that final cause, or intelligent purpose, does not exist, except in man's own activities and in his own thought of external things. This tendency to think of general action as implying an end, or purpose, as personal action does, has received the name of **Anthropomorphism** (from the Greek ἄνθροπος, *anthropos*, man, and μορφή, *morphe*, form), implying that this is only a fashion of human thinking, without objective validity. Those who have repudiated **teleology** (from the Greek τέλος, *telos*, end, and λόγος, *logos*), and have attempted to reduce everything to mechanism, have never been able to avoid involving the idea of final cause even in their statements of their own doctrine. **Ernst Haeckel**

1834–), the German naturalist, says: "Inheritance is the centripetal or internal *formative tendency* which *strives to keep* the organic form in its species, *to form* the descendants like the parents and always *to produce* identical things from generation to generation. Adaptation, on the other hand, which counteracts Inheritance, is the centrifugal or external *formative tendency*, which *constantly strives to change* the organic forms through the influence of the varying agencies of the outer world, *to create* new forms out of those existing, and entirely *to destroy* the constancy or permanency of species."[7] Here are "*formative tendencies*" "*striving*" to realize different *ends* and actually succeeding! And yet Haeckel says, "We concede exclusive dominion to that view of the universe which we may designate as the mechanical and which is opposed to the teleological conception."[8] Is it possible that a "formative tendency" "striving" "to keep" and "to form," "to change," and "to create" should be mechanical and not teleological? Take also **Herbert Spencer's** definition of "life." He says: "Life is definable as the continuous adjustment of internal relations to external relations."[9] Such an "*adjustment*" embodies the teleological principle, the use of means for the accomplishment of ends. A machine never adjusts itself. It is itself an adjustment of forces related as means to ends. And yet Spencer rejects all teleology and even the presence of a "formative power" such as Haeckel describes.[10] No naturalist has ever yet been able to state the facts and conditions of organic life and development *without involving the teleological idea*, however stoutly he may deny the reality of a final cause.

5. Distinctions of Teleological Terms.

There are certain terms whose equivalents are to be found in all developed languages, that need to be explained, in order to enable us to apply the principle of final cause. These are as follows:

(1) **Chance.**—Affirming that an event has come by "chance" is not a denial that it has an efficient cause. Chance is the combination of several systems of causes which are developed each in its own series independently

of the others. Thus, two men start out of their houses to go about their affairs, each without reference to the other. If they meet, they meet by *chance*, because two disconnected systems of forces bring them together. If a person sends for them both at the same time, with the intention that they shall meet, they meet by his *design*.

The French philosopher, **Paul Janet** (1823–), in his admirable work on "Final Causes," says: "It sometimes occurs—often, even—that two series of phenomena happen together, yet without our being able to say that they have any action upon each other; and it is even a pleasure to our mind to find out what will happen in this case. For instance, if, in the game of *rouge-et-noir* I bet that the black will win, and it wins accordingly, it is clear that my desire and my word could not have had any influence on the winning of one color or the other, and likewise that the arrangement of the cards, which I did not know, could not have had any influence on the choice I have made. In this case two series of facts, absolutely independent of each other, have happened to coincide with each other, and to harmonize, without any mutual influence. This kind of coincidence is what is called *chance;* and it is upon the very uncertainty of this coincidence that the pleasure, and at the same time, the terrible temptation, of games of hazard rests."[11] It is evident, then, that chance is not an entity, not a cause, but simply a relation between two series of causes and effects acting independently. The *explanation* of anything, therefore, is not to be found in chance, but in the series of causes whose results happen to be combined.

(2) **Adaptation.**—A fitness of one thing for another is called "adaptation." It may be a chance adaptation, that is, result without design, but where the points of fitness are numerous the probability of chance is eliminated and we are forced to look for design. Other adaptations are known to be designed. Design is a true cause, that is, it is a superintending and directing power.

Janet gives the following beautiful **illustration of adaptation** between the conditions of life in the egg of a bird and the external conditions to which it is adapted: "On the outside there is a physical agent called light; within, there is fabricated an optical machine adapted to light: outside, there is an agent called sound; inside, an acoustic machine adapted to sound: outside, vegetables and animals; inside, stills and alembics adapted to the assimilation of these substances: outside, a medium, solid, liquid or gaseous; inside, a thousand means of locomotion, adapted to the air, the earth or the water. Thus, on the one hand, there are the final phenomena called sight, hearing, nutrition, flying, walking, swimming, etc.; on the other, the eyes, the ears, the stomach, the wings, the fins, the motive members of every sort. We see clearly in these examples the two terms of the relation,—on the one hand, a system; on the other, the final phenomena in which it ends. Were there only system and combination, as in crystals, still, as we have seen, there must have been a special cause to explain that system and that combination." "The external physical world and the internal laboratory of the living being are separated from each other by impenetrable veils, and yet they are united to each other by an incredible pre-established harmony." [12]

(3) **Order.**—A regular succession or arrangement of events or objects involves what is called "order." A fixed and unchanging order needs to be accounted for as well as a new and unfolding order, but it does not attract our attention so powerfully. The established order does not seem so wonderful as a departure from it, but it is really more so, because it is more perfect. Order cannot be produced by chance, for the conditions of chance necessitate the absence of order and a series of chances which would produce disorder. The only explanation of order is design.

"The invisible agreement of phenomena must be explained like each visible phenomenon taken separately; this co-ordination is an effect which must have its cause. For example, the geometrical

forms which minerals take in crystallizing may not, indeed, reveal any final cause; but no one will venture to say that this geometric arrangement is an indifferent fact of which it is useless to seek the cause, and that it is by chance and by a simple coincidence that the molecules of such a mineral always happen to arrange themselves under the form of a hexahedron, of a dodecahedron, for that which happens in a constant manner cannot be the effect of a mere accident." [13]

(4) **Correlation.**—When the parts of a whole are related to one another as ends and means, they are said not only to be adapted and to constitute an order, but they are correlated. Kant says, "The organized being is the being in which all is reciprocally end and means." Thus, the human body as an organism is a correlated whole in which each organ is at once an end and a means. Here adaptations multiply and become exceedingly complex, so as to exclude chance as an explanation and necessitate the hypothesis of design.

When treating of Imagination, it was stated that no one had imagined a new animal. The reason is found in the nature of an organism, or correlated interdependence of organs. The great naturalist Cuvier said: "In order that the claws may be able to seize, a certain mobility in the toes will be necessary, a certain strength in the nails, whence there will result determinate forms in all the phalanges and necessary distributions of muscles and of tendons. It will be necessary that the fore-arm have a certain ease in turning, whence, again, will result determinate forms to the bones which compose it. But the bones of the fore-arm, being articulated on the humerus, cannot change their forms without involving changes in the latter. . . . The play of all these parts will require certain proportions in all their muscles and the impressions of these muscles, thus proportioned, will again determine more particularly the form of the bones." [14] While the comparative anatomist may be able from a single bone to reconstruct in fancy the whole animal to which it belonged, with this datum to work upon, no one has possessed the power

to create mentally an entire animal organism that would fulfill all the complicated conditions of organic life.

(5) **Convergence.**—There are cases where the adaptations converge upon a single point, marking it as the end toward which all the efficient causes have worked. Thus, all the parts of so highly complicated a structure as the eye are means to the one ideal end of sight. Here the past has been determined by an end that has relation to the future. The idea seems to have existed somewhere before the organ, and the organ has been adapted to its function by the converging action of many efficient causes.

If we fix our attention upon any definite combination of matter in the structure of the eye, it is evident that it was put there by efficient causes. Final cause does not, then, exclude efficient causes or render them unnecessary. But the special problem is to explain the *combination*, internal and external, to be found in the eye. What has combined and directed these efficient causes in the formation of an eye? If we say it is the reaction of light upon sensitive nerve-substance, we simply push back the problem, but it remains a problem still. What directing power combined the sensitive elements in the nerve-substance and endowed them with sensibility? What power adapted the light to the rudimentary possibility of an eye, so as to effect its development? By pushing back the problem we only broaden and deepen it. It shows us more and more clearly the range and extent of adaptations throughout the entire universe. Even the German philosopher, **Eduard von Hartmann** (1842–), who has denied all *consciousness* of plan and purpose in the universe, outside of finite creatures, admits an *unconscious* teleology, an inherent final cause in every form of being, and even makes it the basis of his "Philosophy of the Unconscious."

6. Conditions Implied in Final Cause.

Final cause implies as its necessary conditions: (1) **Foreknowledge of the end** before the causes are combined for

its realization; (2) **Determination to realize the end**; (3) **Supremacy over the efficient causes** by which alone the end can be realized.

To this doctrine of final causes there is but one **scientific objection.** It is, that final causes are *anthropomorphic.* Efficient causes, it is said, are necessary to account for all phenomena; but final causes exist *only in the mind of man.* But are efficient causes, as known or knowable by the mind of man, any less anthropomorphic? In truth, no explanation can satisfy the mind of man but one that *is* anthropomorphic, for that alone can be an explanation to him which resolves phenomena into terms of his own nature and experience, and what is this but anthropomorphism? When Haeckel and others speak reproachfully of final causes because they are anthropomorphic, they should remember that efficient causes, as known and reasoned about by man, are not less anthropomorphic. In order to reason correctly, must man abnegate the very rational nature by which alone he is able to reason at all? The reason why mechanical forces alone do not explain the universe to man is precisely this: *they are not anthropomorphic enough to account for man.*

If man is to have any **explanation** of his existence, which his rational nature has always demanded and still demands, he must find it either by explaining the universe in terms of personality, or by explaining his own personality in impersonal terms. And let us remember here that **evolution** is not unfavorable to a personal explanation, because evolution is only a formal and not a causal theory. It tells *how*, but not *why*. It gives the *process*, but not the *cause*. In seeking the cause we may fairly fix upon the *highest* product of evolution and do-

mand for this an adequate explanation. And, again, as there is advance from low to high modes of being in the line of evolution, it is fair to regard the permanent cause as transcending the lowest form of being, or else the cause would not be adequate to the production of the highest. The cause may be for a time unmanifested in the effect, but it must exist latently or it could not be adequate for the highest and final effect. Evolution, therefore, involves the existence of a **transcendent cause,** to render the progress possible. Otherwise, the cause would be exhausted in the *first* effect and further development would not follow. The highest mode of being directly known to us is *personality,*—rational, self-determining intelligence. If there be a higher, and this is possible, it must still be conceived by us under this form. Nothing less than personality can explain personality. Nothing can be an explanation to me that is not in terms of my own nature. What I know directly in consciousness is thought, feeling and volition. To translate these into anything else is to substitute new thought for old, but it is thought still, or it is nothing intelligible. To say that thought is the result of matter or of force, is to say nothing, until the nature of matter or force is made plain to me, and then it has been translated into thought again. When matter and force have been explained to me, I find the explanation in the *knowledge* finally given. Abstract the knowledge, and we spoil the explanation. **Thought, then, is ultimate.** Matter and force are but phases of thought, so far as they mean anything to me. They must be thought *by me* before they are an explanation, but when they are my thought the explanation is found in the *thought* about them, they do not explain the thought.

I am a force working for rational ends. I require, therefore, to account for myself, **a rational cause.**

7. The Ultimate Cause.

All phenomena, being events, are caused. All the facts of human experience,—the birth and development of every living being and the formation of the earth and the other planets,—are phenomena that have appeared in an ordered succession of events. If nothing exists but phenomena, we must allow thought to follow back the series of events and causes without limit, that is, to infinity, without ever coming upon a *first cause.* If, however, we admit the existence of Absolute Being, we arrive at last at an Ultimate Cause; which, *not being an event,* but Self-sufficient Being, is not the result of any cause. This is, undoubtedly, a necessity of human thought. The mind rests at last upon the Self-existent, the Absolute and Ultimate.

An American thinker, **J. Lewis Diman** (1831–1881), has very forcibly expressed this necessity of thought as follows: "Accepting this principle, which no one will deny, that for every event there must be a cause, the question next arises, How far does it legitimately carry us? The notion that the principle of causality can only be abstractly applied, has led some to argue that it can only result in an eternal succession of causes and effects. We have, then, to ask the question, What can be evolved from the idea of cause as it exists in our own minds? Does this idea demand finality, or is it satisfied with an endless series? In other words, does the same necessity of thought, which requires us to believe in cause at all, require us equally to believe in a *first* cause? The objector may urge, 'I hold to causation, but why must I believe in a first cause? What greater difficulties are there in an infinite succession of causes than in an original and self-existent cause? Both are absolutely incomprehensible; both raise difficulties which I cannot solve. But why

compel me to choose one of these dilemmas rather than the other?' The objection, at first sight, seems plausible, but loses its force when we reflect that *an infinite series does not make a cause*, and a cause is precisely what reason here demands. *The real alternative does not lie between an infinite series and a first cause, but between accepting a first cause, or rejecting the idea of cause altogether.*"[15]

In this section, on "Cause," we have considered :—

1. ***Various Senses of the Word "Cause."***
2. ***Opinions on the Nature of Efficient Cause.***
3. ***Final Cause.***
4. ***The Principle of Final Cause.***
5. ***Distinctions of Teleological Terms.***
6. ***Conditions Implied in Final Cause.***
7. ***The Ultimate Cause.***

REFERENCES : (1) Hume's *Works*, pp. 87, 89. (2) Mill's *System of Logic*, p. 245. (3) *Id.*, p. 241. (4) Kant's *Critique of Pure Reason* (Müller's Translation), Vol. I., p. 472. (5) Hamilton's *Metaphysics*, p. 689. (6) Bowne's *Introduction to Psychological Theory*, pp. 169, 170. (7) Haeckel's *History of Creation* (Lankester's Translation), Vol. I., p. 253. (8) *Id.*, p. 17. (9) Spencer's *First Principles*, p. 84. (10) Spencer's *Biology*, Vol. I., p. 404. (11) Janet's *Final Causes* (Affleck's Translation), pp. 18, 19. (12) *Id.*, p. 42. (13) *Id.*, p. 27. (14) Quoted by Janet, *Id.*, p. 48. (15) Diman's *The Theistic Argument*, pp. 84, 85.

SECTION III.

SPACE.

1. Relations of Co-existing Bodies.

Every finite being has **position**, or is *somewhere*. Position, considered apart from the properties of matter, is a *point*, having location but not dimensions. Position, however, is a relation between bodies, determined by **direction.** This is indicated by a line connecting the points of position. A line possesses length but not breadth or thickness. Since a line between two points may be divided into parts, bodies are separated by **distance,** which is represented by the number of lines of a certain standard length, or unit of measurement, contained in the line drawn between the bodies. Lines may be so combined as to form **surfaces,** which have length and breadth but not thickness. Surfaces may be so combined as to form solids, which have position, length, breadth and thickness combined, that is, **magnitude.** All material forms of being have magnitude. Bodies co-exist in the relations of position, direction, distance and magnitude. Bodies may be conceived as not existing, but if they exist they must exist in these relations. They are necessary conditions of material existence. They are grouped together under the name **Space.**

"The first condition of **spatial experience** seems to lie in the extensity of sensation. This much we may allow is original: for the longer we reflect the more clearly we see that no combination or association of sensations varying only in intensity and quality, not

even if motor presentations were added, will account for the space-element in our perceptions. A series of touches *a, b, c, d,* may be combined with a series of movements m_1, m_2, m_3, m_4; both series may be reversed; and finally the touches may be produced simultaneously. In this way we can attain the knowledge of the co-existence of objects that have a certain quasi-distance between them, and such experience is an important element in our perception of space; but it is not the whole of it. For, as has been already remarked by critics of the associationist psychology, we have an experience very similar to this in singing and hearing the musical notes of the chromatic scale. The most elaborate attempt to get extensity out of succession and co-existence is that of Herbert Spencer. He has done, perhaps, all that can be done, and only to make it the more plain that the entire procedure is a *hysteron-proteron.* We do not first experience a succession of touches or of retinal excitations by means of movements, and then, when these impressions are simultaneously presented, regard them as extensive, because they are associated with or symbolize the original series of movements; but, before and apart from the movement altogether, we experience that massiveness or extensity of impressions in which movements enable us to find positions, and also to measure."[1] Such a primary knowledge of space-filling sensation may be called intuitive. It does not include a definite knowledge of space-relations, however. These are acquired by analyzing the extensity presented to consciousness by each and all of the senses, but preëminently by touch. As was stated on page 51, "extension, or space-occupancy, seems to be a datum in every actual experience of Sense-perception."

2. Space, Extension, and Immensity Distinguished.

Space, extension, and immensity should be discriminated as follows:

(1) **Space** is a relation of co-existence between material bodies.

(2) **Extension** is the attribute of continuity in matter.

(3) **Immensity** is the attribute of immeasurability in Infinite Being.

"When it is said that we cannot in thought reach the limits of space, the reference is clearly to an effort of the Imagination in stretching out one beyond the other a succession of marks symbolic of limitation, such as imaginary pillars, or constantly enlarging circumferences of circles. In such an effort of the Imagination we are not dealing with space at all, since space has no application [except ideally] to our mental energies. . . . The attempt to advance the pillars still farther onward, or to enlarge the circles, is purely an effort of Imagination working with the symbols of external realities, and nothing more. In prosecuting the effort there is progression in time, or the succession in mental states, but there is positively no progression whatever in space."[2] We cannot, therefore, speak of space as infinite, except in an ideal sense. If we let Imagination wander off in any direction, there is nothing to hinder its going on as long as we have the strength to keep up this imaginary motion. The process is, in this sense, endless. Real space is both actually and ideally immeasurable. No telescope has penetrated to the utmost bounds of the actual universe of matter. However extended the universe may be, there must be space outside. If, however, we pause to ask, What is this space outside? the only answer is *nothing*, emptiness, pure vacuity, and yet sustaining certain relations of position, direction and distance to other localities. But suppose the whole universe of matter destroyed, what positions, directions and distances would remain? An infinite number of *possible* but no actual ones. But we continue to think of space-relations when the universe is abolished, we think of *the place where it was!* We learn from this that the idea of space is a structural principle of thought.

3. Space a Relation, not a Substance or an Attribute.

We have distinguished space as a relation of co-existence. It has often been treated as an entity and as an attribute of Being. If it be anything at all, and not a mere nothing, it is either a substance, an attribute of a substance, or a relation. Let us examine these three suppositions:

(1) **Space is not a substance.**—This is evident from its not possessing any attributes. It has none of the positive qualities of Being. It is described negatively, except when considered as a relation between real beings. Remove from a given position the substance that occupies it, and space remains simply as a relation between the surrounding bodies.

(2) **Space is not an attribute of a substance.**—This is evident from its not being removed when a substance is taken away. The *extension* of a body, that is, its continuity, is an attribute, but it goes with the body when it is removed. Space remains behind to show the relations in which the body existed.

(3) **Space is a relation of co-existence between material bodies.**—Between separated bodies, that is, between bodies having any "space" between them, there is a relation of position, a relation of direction, and a relation of distance, —and there is nothing more. Space is these relations; or, more generally, the relation of co-existence.

It would be idle to attempt to trace the vagaries of the philosophical mind in relation to the nature of space. Its negative character has permitted thinkers to deal with "space" with the same freedom that Hegel employed in dealing with the "idea," that is, to take almost any liberties that fancy might suggest! Truth is so much more important than error that a passage like the following, by **Calderwood**,[3] is of more value than whole chapters like some that might be readily referred to in treatises on Psychology and Philosophy: "What we have been accustomed to denominate Space is the recognized relation of extended objects, and as it applies exclusively to what is extended, it has no application whatever to mind and its operations. If we admit of the distinction between empty space and occupied space, what is called empty space is the relative position of two bodies, or the distance which separates them, and is capable of being measured by the same standard as the extended surface of the

objects themselves. If extension be considered as equivalent to space, which I am inclined to deny, then it is a perceived quality of objects, and it may be said in a sense capable of vindication, that we *see* space. In this application alone can it be said with appreciable meaning that space is an 'extensive quantity.' I conceive, however, that the term *space* is more usually and properly applied to what has been designated *empty space*, in contrast to extended surface. And such empty space is nothing more than the relative distance of extended objects from each other, measured on a standard similar to that which applies to the bodies themselves. In this way it is equally accurate to say that there is a certain specified *distance* between the bodies, and that there is *nothing* between them, because space is nothing but their relation to each other."[4]

4. The Objectivity of Space.

Kant has treated space as a mere internal form of the mind, rather than as an objective and real relation of external phenomena. In opposition to this, we may say that the objectivity of space rests upon the same foundation as the objectivity of matter; for the relations of a thing must be where the thing itself is. The doctrine of Relationism is opposed to the whole Kantian scheme of Subjectivism. Space is both a constitutive relation of bodies and a regulative law of mind, not a mere category of the mind itself.

Kant says: "Space is nothing but the form of the phenomena of all external senses; it is a subjective condition of our sensibility, without which no external intuition is possible for us. If, then, we consider that the receptivity of the subject, its capacity of being affected by objects, must necessarily precede all intuition of objects, we shall understand how the form of all phenomena may be given before all real perceptions, may be, in fact, *a priori* in the soul, and may, as a pure intuition, by which all objectively must be determined, contain, prior to all experience, principles regulating their relations. It is, therefore, *from the human standpoint only*

that we can speak of space, extended objects, etc. If we drop the subjective condition under which alone we can gain external intuition, according as we ourselves may be affected by objects, the representation of space means nothing."[5] It is "from the human standpoint only" that we can speak of *anything*. Of course "space means nothing" to us, except as it is *known* by us! Here is a root of skepticism that should be pulled up. If we must always think of things as in space, it is because they *are* in space. So far as we have any knowledge, or suspicion, on the subject, things are in space from a "canine" or "feline" standpoint quite as much as from a "human" standpoint. Kant's "only," as here employed, is either meaningless or else it is a great leap in the dark. If the town in which I live is *outside of me*, the space in which it stands is also outside of me, not only as a necessity of my thinking, but as a necessity of its own existence.

5. Real and Ideal Space.

The truth in Kant's doctrine is, that space is not *only* objective and real, but *also* subjective and ideal. These two are not the same. The houses of a town exist in real space. My representative ideas of those houses are disposed in my consciousness in ideal space. Real space is the relation between real bodies. Ideal space is the relation between subjective ideas of bodies. All the products of Imagination are arranged in space. Vast cathedrals, whole cities, the entire solar system, as apprehended by the mind, are thus represented in ideal space, in consciousness. In the flight of Imagination from the earth to the most distant star, the conscious subject does not leave the narrow boundaries of a few inches,—the dimensions of his cranium!

"Animals," says **Spencer**, "having great locomotive powers are not likely to have the same conceptions of given spaces as animals whose locomotive powers are very small. To a creature so con-

structed that its experiences of the larger spaces around have been gained by long and quick bounds, distances can scarcely present the aspects they do to a creature which traverses them by slow and many steps. The dimensions of our bodies and the spaces moved through by our limbs, serve us as standards of comparison with environing dimensions; and conceptions of smallness or largeness result, according as these environing dimensions are much less or much greater than the organic dimensions. Hence, the consciousness of a given relation of two positions in space, must vary quantitatively with bodily bulk. Clearly, a mouse, which has to run many times its own length to traverse the space which a man traverses at a stride, cannot have the same conception of this space as a man. Quantitative changes in these compound relations of co-existence are traceable by each person in his own mental history, from childhood to maturity. Distances which seemed great to the boy seem moderate to the man; and buildings once thought imposing in height and mass, dwindle into insignificance. The physiological state of the organism also modifies quantitatively this form of consciousness to a considerable extent. De Quincey, describing some of his opium dreams, says that 'buildings and landscapes were exhibited in proportions so vast as the bodily eye is not fitted to receive. *Space swelled*, and was amplified to an extent of unutterable infinity.' It is not an uncommon thing with nervous subjects to have illusive perceptions in which the body seems enormously extended; even to the covering an acre of ground."[6]

In this section, on "Space," we have considered:—

1. Relations of Co-existing Bodies.

2. Space, Extension and Immensity Distinguished.

3. Space a Relation, not a Substance or an Attribute.

4. The Objectivity of Space.

5. Real and Ideal Space.

References: (1) James Ward's *Psychology* (Encyclopædia Britannica XX.), p. 53. (2) Calderwood's *Philosophy of the Infinite*, pp. 333, 334. (3) For examination of writers on Space and references, see Cocker's *Theistic Conception of the World*, pp. 68, 75. (4) Cal-

derwood's *Philosophy of the Infinite*, pp. 331, 332. (5) Kant's *Critique of Pure Reason* (Max Müller's Translation), II., pp. 23, 24. (6) Spencer's *Principles of Psychology*, Part II., Chapter III.

SECTION IV.

TIME.

1. Relations of Successive Phenomena.

Every event begins at some **instant.** It constitutes one of a series, and appears in an order of **succession.** Succession involves the relation of **antecedent** and **consequent,** that is, events are distinguished as *before* and *after*. A single instant gives us one, or a unit. By the addition of units we obtain a numerical quantity. There are concurrent successions of events, the successive instants of which may be numbered. Taking some one of the units as a standard, these quantities may be measured by the number of times the standard is contained in the quantities. An event beginning at some instant may also end at some instant. Its continuance from its beginning to its end is called its **duration.** All events have duration. As related to one another, they exist in the relation of antecedent and consequent, unless they are contemporary. Events may be thought of as never occurring, but if they occur they occur in these relations. These are the necessary conditions of the occurrence of events. They are grouped together under the name **Time.**

The experience of succession requires as its condition **the permanence of the knowing self** during the period of the experience of

such succession. Here, as everywhere, we see how inadequate is the theory of self which resolves it into a mere flow and succession of sensations. That which compares the past and the present must itself have duration as the condition of such relating activity. This is so obvious that it is difficult to see how any one could ever have overlooked it. But the power to know is quite as essential to this activity as duration of being. Hence the futility of every attempt to derive the knowing power from the series of sensations which requires it as the necessary precondition of their being known.

2. Time, Duration and Eternity Distinguished.

Time, duration and eternity should be distinguished as follows:

(1) **Time** is a relation of succession between events or phenomena.

(2) **Duration** is the attribute of continuance in events or phenomena.

(3) **Eternity** is the attribute of unlimited duration in Infinite and Absolute Being.

3. Time a Relation, not a Substance or an Attribute.

Like space, time has often been treated as if it were a substance or an attribute. Examination will show that it is neither, but simply a relation.

(1) **Time is not a substance.**—It possesses no attributes. Except as a relation between phenomena, there is nothing by which it may be distinguished.

(2) **Time is not an attribute of a substance.**—Substances have being during changes which occur in time, but time is not a quality that may be attributed to any substance. Continuance is an attribute of substance as it is of phenomena, but this is duration.

(3) **Time is a relation.**—What we call an "hour" is simply the twenty-fourth part of a day, or period during which the earth revolves on its axis. It notes a series of changes, and is wholly meaningless except as we imagine change. It is the relation of succession between these changes.

4. The Objectivity of Time.

Kant has denied the objectivity of time, in the same manner and on the same ground as the objectivity of space. Can we convince ourselves that time-relations did not really subsist between the geological epochs, and that time applies to them only in our own minds? If not, we shall be obliged to dissent from this form of Subjectivism also and accept the objectivity of time.

Kant says: "Time is simply a subjective condition of our (human) intuition (which is always sensuous, that is, so far as we are affected by objects), but by itself, apart from the subject, nothing."[1]

5. Real and Ideal Time.

Time, like space, is both real and ideal. All our products of Imagination are grouped in the relation of time. It is possible for us to imagine geological epochs in a few moments of time. This shows that time is a mere relation that may exist between purely imaginary phenomena as well as between actual events. "The flight of time," as we call it, depends upon subjective conditions. Real time, as measured by the sun or by clocks and watches, may be very "long," that is, include a great many successive motions, while ideal time covering the same interval may be very "short," or *vice versa.*

This is the truth expressed in the lines of Bailey's "Festus":

> "We live in deeds, not years; in thoughts, not breaths;
> In feelings, not in figures on a dial.
> We should count time by heart throbs. He most lives
> Who thinks most—feels the noblest—acts the best."

"Subjective rhythms, partly of the vital functions and partly of the locomotive functions, mark out consciousness into tolerably regular intervals; thus yielding measures between states of consciousness otherwise caused—standards of duration. Hence a small creature, in which these rhythms are very rapid, must have a consciousness of a given objective interval widely unlike the consciousness of it possessed by a large animal, whose rhythms are relatively very slow. A gnat's wings make ten or fifteen thousand strokes per second. Each stroke implies a separate nervous action. Each such nervous action, or change in a nervous centre, is probably as appreciable by the gnat as is a quick movement of the arm by a man. And if this, or anything like this, is the fact, then the time occupied by a given external change, measured by many movements in the one case, must seem much longer than it seems in the other case, when measured by a single movement. . . . Whatever exalts the vital activities and so makes mental impressions stronger, exaggerates the conceptions of durations. This is notably the case in persons under the influence of opium. Detailing his experiences of this influence, De Quincey says that he sometimes seemed 'to have lived 70 or 100 years in one night;' nay, to have had 'feelings representative of a millennium passed in that time, or, however, of a duration far beyond the limits of any human experience.' . . . Intervals of time, like intervals of space, become apparently small in proportion to their remoteness. An evening spent at a friend's house, seems of considerable length when looked back upon at the moment of departure. When recalled a week after, it subtends by no means so great an angle in consciousness; and the angle it subtends in consciousness when we are reminded of it a year after, is very small."[2]

6. The Relation of Space and Time to each other.

Space is a relation of co-existence and time is a relation of succession. The same realities exist in both relations.

Thus, the earth co-exists with the other bodies in the solar system and constantly changes its relation of co-existence by its motions. Motion involves the relations of both space and time. The earth rotates on its axis 365 times while it is making one revolution round the sun. Thus space is the measure of time, and time is the measure of space. Given the time and the velocity, we can calculate the distance; or given the distance and the velocity, we can calculate the time. Thus all our measures of time are motions in space, the revolution of the earth round the sun making a "year," the rotation of the earth on its axis making a "day," and a certain number of oscillations of a pendulum making an "hour." Hence the adjectives applied to space come to be applied also to time, and we speak of a "long" time and a "short" time. We usually mean by these terms to indicate duration; but duration is measured by time, that is, by the number of successive phenomena in something moving. For example, one says he is twenty years old, meaning that his duration as a living being has been twenty years of time, or twenty revolutions of the earth round the sun.

"Let us suppose, that from some given instant, for example from to-day, the course of the stars and of our earth becomes twice as rapid as before, and that the year passes by in six months, each season in six weeks and each day in twelve hours; that the period of the life of man is in like manner reduced to one half of its present duration, so that, speaking in general terms, the longest human life, instead of eighty years, lasts for forty, each of which contains as many of the new days of twelve hours as the former years did, when the days were twenty-four hours long; the drawing of our breath and the stroke of the pulse would proceed with double their usual rapidity, and our new period of life would appear to us of the normal length. The hands of the clock would no longer make the circuit in one hour and in twelve, but the long hand in thirty minutes, the short one in

six hours. The development of plants and animals would take place with double their usual speed; and the wind and the lightning would consume, in their rapid course, but one half of their present time.

"With these suppositions, I ask, in what way should we be affected by the change? The answer to this question is, We should be cognizant of no change. We should even consider one who supposed or who attempted to point out that such a change had taken place was mad, or we should look upon him as an enthusiast. We should have no possible ground to consider that any other condition had existed. Now, as we can determine the lapse of any period of time only by comparison, or by measuring it with some other period, and as every division of time which we use in our comparison or in our measurements has been lessened by one half its duration, the original proportion would still be unchanged. Our forty years would pass as the eighty did; we should perform every thing twice as quickly as before; but as our life, our breath, and our movements are proportionally hastened, it would be impossible to measure the increased speed, or even to remark it. As far as we could tell, every thing had remained precisely as it was before, not comparatively, but absolutely, provided we had no standard, external to the accelerated course of events in the world, by which we could perceive the changes or measure them. A similar result would follow, if we imagined the course of time reduced to the fourth, instead of to the half, so that the year would consist of three months. . . . For the same reasons, if the period and processes of life and the course of events in the world around us, were accelerated a thousand or a million times, we should obtain a similar result!"[3]

In this section, on "Time," we have considered:—

1. ***Relations of Successive Phenomena.***
2. ***Time, Duration and Eternity Distinguished.***
3. ***Time a Relation, not a Substance or an Attribute.***
4. ***The Objectivity of Time.***
5. ***Real and Ideal Time.***
6. ***The Relation of Space and Time to each other.***

REFERENCES: (1) Kant's *Critique of Pure Reason* (Max Müller's Translation), p. 30. (2) Spencer's *Principles of Psychology*, Part II., Chapter III. (3) *The Stars and the Earth* (anonymous, edited by Thomas Hill), pp. 67, 70.

SECTION V.

THE DEVELOPMENT OF INTELLECT.

1. Summary of Results.

In the preceding pages, we have examined the four kinds of knowledge which we possess and the powers and processes by which they are obtained. We must not forget, in the multiplicity of details, **the essential unity of the soul.** Intellect is simply one of the three generic modes of psychical activity ; Sensibility and Will, which we have still to consider, being the other two. While Intellect is employed in a variety of modes, each one of which we call, for convenience, a "power" or a "process" of Intellect, it must not be supposed that Intellect is a bundle of separate entities, like the organs of the body ; it is rather **one faculty acting in many ways.** Never losing sight of these truths, we may, for the purpose of a summary, classify the results and processes of Intellect as follows.

Intellect obtains:

- I. Presentative Knowledge, by
  1. Self-consciousness.
  2. Sense-perception.
- II. Representative Knowledge, by
  1. Association.
  2. Phantasy.
  3. Memory.
  4. Imagination.
- III. Elaborative Knowledge, by
  1. Conception.
  2. Judgment.
  3. Reasoning.
- IV. Constitutive Knowledge, by Rational Intuition of
  1. Being.
  2. Cause.
  3. Space.
  4. Time.

2. The Stages of Knowing.

It is evident that the order which we have followed in our examination is also the order in which the different processes of knowing become possible. Sense-presentation, association of ideas, reproduction of ideas, recognition of ideas, recombination of ideas, formation of abstract ideas, judgment and reasoning are possible only as each preceding stage furnishes the materials for each successive process in the development of intellectual activity. It may be said that Self-consciousness is not necessary to these processes. Whether Self-consciousness is an exception or not, depends entirely upon what is involved in it. If it is interpreted to mean (1) *an abstract idea of self,* the product of Conception, it is certainly not necessary and must be considered as a late product of thought. If, however, we mean by it (2) *a concrete consciousness of having sensations and perceptions and knowing these as our own,* it seems to be an indispensable condition of all continuous mental experience. It is in this latter sense that the term "Self-consciousness" has been employed.

The use of the pronoun "I" to indicate the conscious self, is a comparatively late acquisition in the psychical experience of a child. The poet Tennyson has beautifully expressed the truth upon this point:

"The baby, new to earth and sky,
What time his tender palm is pressed
Against the circle of the breast,
Has never thought that this is I.

"But as he grows, he gathers much,
And learns the use of 'I' and 'me,'
And finds I am not what I see,
And other than the things I touch;

"So rounds he to a separate mind,
From whence clear memory may begin,
As thro' the frame that binds him in,
His isolation grows defined."

Long before the pronoun is employed, the child uses his own proper name, caught from the lips of others, to designate himself. But even long before this, he is conscious of himself as the subject of pain and pleasure, sights and sounds. However difficult it may be to trace and to date the dawn of Self-consciousness, it is certain that at the beginning of rational life lies the distinction of subject and object. The child who says "I," or who even lisps his own name, has accomplished a feat which no lower animal can perform at the climax of its development. He has opened his eyes upon the rational order that is never apprehended by the brute, however acute his senses and however astonishing his instincts.

3. The Development of Intellect.

The progressive unfolding of the knowing power is an evident development. Its rapidity varies in different persons and in different races, and in some it is liable to final arrest at stages which others pass. The majority of men never develop the highest power of analysis and reflection. Are we to hold, in the light of these facts of development, that Intellect is gradually evolved from something that is not Intellect, or must we consider its growth as the progressive manifestation of a peculiar power already latent in the soul? The Sensational School of psychologists would derive all the higher powers of Intellect from sensation.[1] For them, mind is simply a "series of sensations," growing in complexity with the increase of experience. Our whole analysis of Intellect has shown the inadequacy of this theory. Intellect always accompanies sensation and is necessary to the interpretation of it. No conceivable transformation of mere sensation, or association of

sensations, can explain even the simplest processes of knowledge. We must assume, at the very beginning, a knowing power, or Intellect, capable of distinguishing and interpreting sensations, or emergence into rational life is impossible.

The "**association of ideas**" is mainly relied upon by such writers as **Mill**[2] and **Bain**,[3] to explain the evolution of Intellect from sensation. There can be no "idea," however, without a knowing subject already possessing Intellect. Isolated sensations do not constitute "ideas." Ideas are forms of knowledge in a conscious mind. "Association" explains nothing. As we have seen, it requires to be explained, and when explained is finally resolved into a habit of the soul. Even sensations exist only for a being that *knows* them. If it be said that vibrations in the brain become associated, the whole ground is shifted. Such molecular movements are not Intellect and no combination of them alone would constitute knowledge. Every attempt to derive Intellect from something else, either psychical or physical, melts away upon close examination. We can simply assert that the conscious subject possesses Intellect, a power of knowing which, like every other power, develops with exercise.

4. The Parallel Development of Intellect and Brain.

In connection with the fact that Intellect develops, we have the kindred fact that Intellect and brain develop *together*. As the brain of a child grows, Intellect increases; when the brain is injured or diseased, the functions of Intellect are impeded; when health is restored to the brain, the vigor of Intellect is regained. These, in a general way, are unquestioned facts of observation. But the parallelism is not absolute. The development of Intellect does not depend entirely upon the growth of the physical organ, the brain, which so largely conditions its activity. It has never been shown that the physical qualities and health of the brain directly produce intellectual

power. There is no discovered correlation between the vigor of Intellect and any peculiarity in the structure, size, weight, or any other definable quality of the brain. **Nothing improves Intellect but the exercise of Intellect.** The possessor of a perfectly symmetrical and fully developed brain may remain ignorant and stupid, if he does not develop his Intellect by voluntary exercise. Some of the world's most vigorous minds, on the other hand, have been housed in unsymmetrical and diminutive brains, constantly filled with physical pain indicative of disease. The parallelism, then, is not closer than that between fine workmanship and superior tools,—which certainly does not prove that the tools do the work.

Tiedemann, the physiologist, and **Hausmann,** the mineralogist, are examples of very able men with small brains, theirs weighing, respectively, 44 and 43 ounces. In savages of the quarternary age, who fought the mammoth and the cave-bear with rude stone weapons, the size of the brain-case was above that of the average modern man.[4] Such considerations have led the French anthropologist, **Paul Broca,** the most erudite of craniologists, to conclude that "no well-instructed man would think of ever estimating the intelligence by measuring the encephalon."[5] The best established correlation between the brain and other elements in human life, is between its size and complexity and the complexity of the muscular system.[6] The heaviest human brain yet on record, according to **Bastian,** was that of a Sussex bricklayer who could neither read nor write. His brain weighed 67 ounces. This is two and a half ounces heavier than Cuvier's, which weighed 64.5 ; and fourteen and a half ounces heavier than that of Daniel Webster, which was considered exceptionally large. Bastian concludes that it "seems perfectly plain from the facts recorded that there is no necessary or invariable relation between the degree of intelligence of human beings and the mere size or weight of their brains."[7] Those who desire to find in brain-growth some explanation of intellectual development, usually affirm that this development depends on "quality." It has not, however,

yet been demonstrated by anatomical or physiological science precisely what this vague word "quality" is meant to signify. It has not been shown that Intellect is associated in any absolute or decisive manner with any special configuration, disposition of internal constituents, or proportion of chemical elements in the brain. This is conceded by all reputable anatomists and physiologists. It is evident, therefore, that all generalizations on this topic and all confident emphasis on the word "quality," without specific definition, are either dogmatism or speculation, not science.

5. The Inheritance of Intellect.

Extended observation has shown that intellectual power is capable of transmission by inheritance.[8] Of this fact there can be no longer any doubt. There are, it is true, important exceptions, and much also must be ascribed to favorable conditions of growth in childhood and youth, such as domestic and educational influences. Mere association with intellectual companions is an incalculable advantage, and this the children of intellectual parents usually have. But, after all reductions are made, the fact still remains that a high degree of intellectual power is directly inherited. **Spencer** and others have employed this fact in explaining the evolution of mind from lower to higher forms. This method of treatment simply pushes back the problem but does not solve it. It does not explain the *origin* of Intellect, though it may account, in some measure, for its *progress*. What cannot happen in the history of an individual, supposing an indefinite lifetime, cannot happen in the history of the race. Ten thousand years of time would not assist us in deriving Intellect from mere sensation. The case is rendered more difficult in the life of the race, for it cannot be claimed that each generation inherits *all* the attainments of all its

ancestors. As we have seen (page 44), each child has to learn everything from the beginning. He may, indeed, inherit a superior *power* of learning, but indefinite time does not assist in explaining the *origin* of this power.

Locke maintained that, at birth, every mind is like a sheet of blank paper, or a *tabula rasa*,—*i. e.*, a waxen tablet from which all previous marks have been erased. This doctrine was advanced in opposition to that of "innate ideas," held and advocated by **Descartes.** **Leibnitz** tried to answer Locke and to prove that certain powers are inherent in the mind itself. While Locke and his followers held that "There is nothing in the Intellect that has not previously been in the senses," Leibnitz and his disciples maintained that, "There is nothing in the Intellect which has not previously been in the senses, *except Intellect itself*." The notion that children are born with innate ideas, as distinguished from certain necessary principles in the constitution of the mind, has been quite generally abandoned. A French follower of Locke, **Etienne Bonnot de Condillac** (1715–1780), maintained that "ideas" are simply "transformed sensations," and that each individual, as Locke held, develops his whole intellectual nature from his sensational experience. This doctrine has widely prevailed in English thought on the subject also, but the rise of the modern theory of Evolution has revived the old doctrine of "innate ideas;" not in the ancient form, however, but in the form of "inherited tendencies." **Spencer** says: "If, at birth, there exists nothing but a passive receptivity of impressions, why is not a horse as educable as a man? Should it be said that language makes the difference, then why do not the cat and the dog, reared in the same household, arrive at equal degrees and kinds of intelligence?" He then goes on to point out the force of Leibnitz's criticisms on Locke. He proceeds to maintain that what we call "Reason" is organized in the brain by a gradual process of adjustment to external relations, which "adjustment" is transmitted and augmented through successive generations. He concludes that, universal perceptions "being the constant and infinitely repeated elements of thought, they must become the automatic elements of thought—the elements of thought which it is impossible to get rid of—the 'forms of intuition.'"[9] The difficulty in the way of

this ingenious doctrine is, that **Intellect is the pre-condition of all rational experience.** In order that our ancestors should be able to have rational experience whose results they could transmit, they must first have possessed Reason. The inferior animals transmit no such "intuitions," because they do not possess them.

In this section, on "The Development of Intellect," we have considered:—

1. Summary of Results.
2. The Stages of Knowing.
3. The Development of Intellect.
4. The Parallel Development of Intellect and Brain.
5. The Inheritance of Intellect.

References: (1) See the exhaustive review of this attempt, with full and explicit references, in Calderwood's *Handbook of Moral Philosophy*, pp. 98, 122. (2) See the Notes of J. S. Mill in James Mill's *Analysis of the Human Mind*, Chapter III. (3) See Bain's Notes to the last-named work also and his whole treatment of Intellect in *The Senses and the Intellect*. (4) Quatrefages' *The Human Species*, p. 312. (5) *Id.*, p. 410. (6) Calderwood's *Relations of Mind and Brain*, p. 206. (7) Bastian's *The Brain as an Organ of Mind*, pp. 368, 369. (8) See Galton's *Hereditary Genius* and Ribot's *Heredity*. (9) Spencer's *Principles of Psychology*, I., Part IV., Chapter VII.

PART II.—SENSIBILITY.

1. Definition of Sensibility.

Sensibility is the faculty of feeling, or of experiencing pleasure and pain. The word is derived from the Latin *sensibilitas,* which conveys the idea of ability to feel. It is to be distinguished from Intellect, the faculty of knowing, and Will, the faculty of directing.

Numerous efforts have been made to mark **the distinction between knowledge and feeling.** Among the most ingenious of these is the following discrimination offered by **Dewey**: "Feeling is the subjective side of consciousness, knowledge its objective side. Will is the relation between the subjective and the objective. Every concrete consciousness is this connection between the individual as subjective and the universe as objective. Suppose the consciousness to be that arising from a cut of a finger. The pain is purely subjective; it belongs to the self pained, and can be shared by no other. The cut is an objective fact; something which may be present to the senses of all and apprehended by their intelligences. It is one object amid the world of objects. Or, let the consciousness be that of the death of a friend. This has one side which connects it uniquely with the individual; it has a certain value for him as a person, without any reference to its bearings as an event which has happened objectively. It is subjective feeling. But it is also an event which has happened in the sphere of objects; something present in the same way to all. It is objective; material of information. Will always serves to connect the subjective and objective sides, just as it connects the individual and the universal."[1] These statements may assist us in forming a right judgment concerning the nature of feeling, but they tend to confuse our ideas concerning the nature of knowledge. Knowledge may be *of* the objective, but it is not *itself*

objective. It is always relative to the individual mind which knows. If it is *possible* to all who are endowed with the necessary powers, so also is feeling. If we regard the *experience* of both knowledge and feeling, both are subjective. If we regard the *causes* of both knowledge and feeling, these are equally objective. "Consciousness" cannot be regarded as having two "sides," a "subjective" and an "objective" side. The distinction does not seem to hold good and to mark off the peculiar quality of feeling from the peculiar quality of knowledge. These qualities are inexplicable in any terms other than themselves. Whoever can know and feel, knows that knowledge and feeling are different, as he knows that red and blue are different, but the expressions "objective" and "subjective" do not mark this difference.

2. Difficulties in Treating the Phenomena of Sensibility.

As the phenomena of Intellect are forms of knowledge, so the phenomena of Sensibility are forms of feeling. Feeling is not, like knowledge, a psychical activity, but an *accompaniment* of activity. Knowledge can be reproduced by the soul; feeling cannot be reproduced directly, but only as an accompaniment. Hence, there are certain special difficulties in the treatment of feeling.

(1) **The phenomena of Sensibility exist only under certain conditions of production.**—States of feeling cannot be produced at will. Having been produced, they cannot be recalled in their completeness. We have already seen why pains cannot be reproduced (page 98). Representative ideas of feelings are not, properly speaking, feelings. Feelings exist, therefore, only when their special causes are acting. This renders it difficult to compare and study them.

(2) **They are exceedingly evanescent.**—As the causes of feeling are constantly changing, the feelings change. No

state of feeling can persist uninterruptedly for a long time. There is perpetual alternation of different feelings. Hence, feeling has often been compared to a "stream." We speak of "trains of ideas," but of "currents of feeling." The reason is obvious. Ideas persist and have distinct and permanent form in the mind for a considerable time. Feelings have a fluidity that involves constant change.

(3) **The states readily blend together and form compounds.**—We probably never have exactly the same combination of feelings in any two hours of life. The external or the internal factor is slightly modified. It is difficult to analyze any given state into its constituents, because we are ever exposed to the danger of treating a compound state as if it were simple. For this reason the names which we apply to the different forms of feeling do not have exactly the same meaning to different persons. Such words as "appetite," "joy," "sorrow" and "love" signify to each person just what his experience has afforded him, and this is exceedingly variable.

For these reasons, the feelings have not yet received, and probably never will receive, the same definite and satisfactory scientific treatment as the forms of knowledge.

G. E. Lessing (1729–1781), the illustrious German critic, has well stated the difficulties that lie in the way of a scientific treatment of the feelings. He says: "Nothing is more deceitful than general laws for our feelings. Their tissue is so fine and complicated that the most cautious speculation can scarcely seize upon any single thread and follow it through all its entanglements; and if we could do this, what should we gain? There is in nature scarcely any one unmixed feeling; with every individual one a thousand others spring up at the same time, the least of which alters entirely the ground of the feeling, so that exceptions grow upon exceptions, which end in

confining the presumed general principle to the experience of a few part'cular instances."[2]

3. A Science of Sensibility Possible.

If science dealt principally with differences, we could never hope for a science of Sensibility, but it deals more largely with resemblances than with differences. There is enough in the phenomena of Sensibility that is common to all human souls, to permit of the scientific discussion of the subject. We can describe the modes of feeling, class them into certain general groups, explain the conditions under which they are experienced, and discover the principal laws of their appearance and modification. The difficulties of the subject have, however, thus far prevented the satisfactory accomplishment of these results, and at the present time the feelings present the least developed department of Psychology.

Much attention has recently been devoted to this long-neglected province of the soul. Much speculation has originated in Germany on the subject of "Æsthetics," mainly directed toward the creation of a philosophical theory of the fine arts; but even in Germany, where this branch of study has received most attention, no very satisfactory scientific investigation of the feelings in the broader sense has yet been accomplished. The Ethical Sentiments have received a certain amount of study, but even here, although this field is so closely connected with the conduct of life, the scientific results have been largely colored by philosophical assumptions of various kinds and much impeded by a want of co-ordination with other forms of feeling. In what is truly valuable our own literature compares favorably with that of other countries, and in recent additions displays a remarkable activity in the cultivation of this field. **Sir Charles Bell** (1774–1842), an English surgeon and anatomist, led the way in the scientific study of the Emotions in his "Anatomy and Philosophy of Expression." **Charles Darwin** (1809–1882), the distinguished

naturalist, continued in the same line in his "Expression of the Emotions in Man and Animals." **Herbert Spencer** has given much attention to the feelings. **Alexander Bain** has treated the subject extensively and originally in his book on "The Emotions and the Will." **Charles Grant Allen** (1848–), a Canadian naturalist and writer resident in England, has produced a work on "Physiological Æsthetics." **James McCosh** has written a volume on "The Emotions." Nearly all the recent text-books on Psychology include some attempt to discuss the subject of Sensibility, which was wholly neglected in most of the earlier treatises intended for use in schools. A great number of articles presenting observations and hypotheses upon the subject may be found scattered through the leading periodicals. All these indications point to a growing interest in this neglected department and give ground for hoping that it will not long remain the chaos which it has been.

4. Characteristics of Sensibility.

States of Sensibility, or feelings, are either **painful** or **pleasurable.** It is impossible to define pain and pleasure except by negation and opposition. They are ultimate facts of experience which can be resolved into nothing simpler, and are known to every human being as real distinctions. Every one knows when he suffers pain or enjoys pleasure, but no one can say what pain and pleasure are. We can, however, ascertain under what conditions they arise in consciousness, and so discover what is essential to their production.

Bain holds that, besides painful and pleasurable qualities, a feeling may have the quality of **indifference.** He says: "A state of feeling may have considerable intensity and yet be neutral. Surprise is a familiar instance. Some surprises give us delight, others cause suffering, but many do neither; yet in all cases we are emotionally moved."[3] It is difficult to detect this alleged "indifference" in feeling. There may be a condition of "surprise," that is, a perception of something unexpected, without either pleasure or

pain and also without feeling of any kind. If there is feeling, in any definite and appreciable sense, it must be either agreeable, that is pleasurable, or disagreeable, that is painful, in some degree, or it would not be appreciated as "feeling." There is an intellectual as well as an emotional "surprise," and it seems as if this distinction had been overlooked. **Sully** and many others reject Bain's idea of an "indifferent" feeling. He says: "By feeling is meant any state of consciousness which is pleasurable or painful. The feelings are pleasures and pains of all sorts, agreeable and disagreeable states of mind. Every feeling is either pleasurable or painful, agreeable or disagreeable, in some degree." In commenting on Bain's doctrine, he says: "It may be questioned whether any feeling as such can be indifferent."[4] A sense-impression, however, may be "indifferent," that is, without the quality of feeling, as when we are conscious of touching, without experiencing either pleasure or pain.

5. The Quality and Quantity of Feelings.

The broadest qualitative distinction of feelings is into **pleasures** and **pains.** Both pleasures and pains are of different qualities, varying according to the organ or faculty by which they are apprehended and the causes from which they proceed. Regarded as to quantity, feelings have **massiveness,** or amount, and **intensity,** or degree. Thus, a tooth-ache may be very intense, without being very massive, while a pain from indigestion may be massive without being very intense. Massiveness has relation to the area of feeling, intensity to the acuteness of it.

6. Division of the Subject.

Various classifications of the modes of Sensibility have been offered, many of them wholly arbitrary and at variance with the use of language.[5] We shall secure a division at the same time psychologically exact, adapted to an orderly discussion, and in harmony with the accepted

use of words, if we recognize two main classes of feelings: (1) **physical feelings,** having a definite origin in the bodily organism, and capable of reference to the locality where they originate, which we shall call **Sensations;** and (2) **psychical feelings,** having their origin in the soul itself on the presentation of certain ideas, and not capable of being located in any part of the organism, which we shall call **Sentiments.** We shall now proceed to consider separately:

(1) ***Sensations;*** and
(2) ***Sentiments.***

REFERENCES: (1) Dewey's *Psychology*, p. 23. (2) Lessing's *Laocoon* (Phillimore's Translation), p. 42. (3) Bain's *The Emotions and the Will*, pp. 14, 15. (4) Sully's *Psychology*, p. 449. See also Bain's defense of his position in *Mind*, October, 1887, pp. 576, 579. (5) For an account of the different modes of classifying the feelings, see Bain's *The Emotions and the Will*, Appendix B. Also *Mind*, April, 1884, pp. 325, 348; and October, 1884, pp. 509, 530.

CHAPTER I.

SENSATIONS.

CLASSIFICATION OF SENSATIONS.

Sensations are the feelings which accompany physical activity. There are two main classes of sensations, some being mere excitations, without involving any tendency to do anything; others being attended with appetency, or a tendency to seek some object when excited. The natural division is, then, into (1) sensations of **Simple Sentience** (from the Latin *sentīre*, to feel), or sensations without any appetency; and (2) sensations of **Appetite** (from the Latin *ad*, to, and *petĕre*, to seek), or sensations attended with appetency. These two classes will be discussed in the following sections.

SECTION I.

SIMPLE SENTIENCE.

1. Kinds of Simple Sentience.

In our discussion of Sense-perception, we classified the senses as Muscular, Organic and Special (pages 32, 33). Our purpose in that examination was to discover the manner in which sensations furnish materials for knowledge,

not to compare them as modes of feeling affording pleasure and pain. Our present purpose is to consider them as feelings, not as materials of knowledge. The same classification will, however, serve in both cases.

(1) **Muscular** sentience is the feeling that arises from the states of the muscles. It is sometimes pleasurable and sometimes painful. The normal exercise of the muscles produces an agreeable feeling, while disease and over-use produce pain. During considerable periods of time, the muscles afford no feelings whatever, and we are practically unconscious of their existence.

After rest and nourishment, the muscles become surcharged with energy and demand activity. If they do not obtain this, a sense of uneasiness follows. If they do obtain it and it is too much prolonged, a different feeling arises, indicating need of repose. These two tendencies, to seek activity and to seek repose, according to the state of the muscles, are really appetites, not forms of simple sentience. We shall consider them later on. The simple sensations are those forms of feeling which arise when the muscles are in activity. They are pleasurable or painful, according to the degree of exercise. So long as the vitality is not overdrawn, pleasure accompanies activity, but as soon as the energy is depleted to a certain point,—possibly at the point where the repair does not equal the waste,—the sensations begin to be painful, and continue to become more and more painful until rest is obtained. Any one may try this for himself by a simple movement of the arm, which, though pleasurable at first, if continued, becomes painful and finally unendurable.

(2) **Organic** sentience arises from the condition of the vital organs, such as the heart, the stomach, the lungs, etc. In diseased conditions they often force themselves upon the attention and completely occupy it. A person with a healthy stomach is hardly aware by his feelings that he has one, while the dyspeptic hardly realizes that

he has any other organ. Pleasure in any high degree is not afforded by these organs, but pain is the sign that they are in an abnormal condition.

Whether or not the organic sensations were provided for by design in the constitution of our bodily organism, they certainly serve an important purpose. They warn us of disease. The health and integrity of these organs are necessary to the proper performance of all the bodily functions and ultimately to the continuance of life. The fact that pain, not pleasure, is the usual mode of their sentient manifestation in consciousness, is evidence of a preserving purpose in the provisions made for their existence. Thus regarded, pain is a token of benevolence in the plan of a human organism, for it appears simply as a signal of warning, and never attends the normal condition and exercise of the body. As we shall see in our study of the appetites, pleasure is connected with those organic actions which are necessary to the preservation of the life of the individual and of the species. The mechanical explanation of this adjustment of pain and pleasure to destructive and preservative actions breaks down completely, and nothing short of a teleological explanation satisfies our intelligence.

(3) **Special** sentience is that which arises from the special sense-organs, and is the concomitant of external perception. As we have seen (page 26), the sensation is in an inverse ratio to the perception. There is, however, a distinct sensuous pleasure in the perceptive use of the senses, apart from the intellectual gratification. Certain sounds, colors, forms, and odors are pleasing in a high degree, without any reference to the knowledge obtained from them. A great part of our enjoyment of nature is of this simple sensuous kind. The bird-songs, the autumnal leaves, the cloud-castles, and the scents of forest and meadow, even when not regarded as elements of that ideal beauty which the Intellect only can apprehend, afford us a thrilling delight. On the other hand, the senses are

pained by sounds, sights, and odors of an opposite kind, not so agreeable to particularize, but equally well known.

The advocates of "Physiological Æsthetics" attempt to explain our entire experience of beauty and sublimity in terms of organic action. As we proceed with our study of Sensibility, we shall see many reasons for rejecting these pretentious endeavors, but at this point it is desirable to call attention to the inadequacy of any merely mechanical or organic action to explain even the simplest of our sensations. We have already seen that there is a great interval between a sense-impression and any form of sense-knowledge (page 40). We have also seen that the simplest perception requires a special psychical reaction (page 61). In like manner, the transition from a sense-impression to a simple sensation regarded as a form of feeling, is a passage from a mode of motion to a mode of consciousness, and requires the reaction of Sensibility. Sensations, whether pleasurable or painful, are not results generated out of mere motion, but require the presence of a recipient endowed with Sensibility. The explanation of a sensation, then, does not lie in any mode of organic action, but in the power of Sensibility possessed by the being who experiences the sensation. The soul, a being different from "matter in motion," is as necessary to the enjoyment of a rose as to the construction of a cathedral. The enjoyment is the passive reception of a passing odor and the construction is an active combination of materials in complicated and original forms, but "matter in motion" is wholly incapable of both.

2. Conditions of Simple Sentience.

There are certain conditions without which sentience does not take place. These are both internal and external to the nervous system.

(1) The **internal** conditions are the health and integrity of the sensor nerves. If a nerve be severed, no sentience can be produced by the excitation of the area of the body thus cut off from communication with the brain. There are certain parts of the body that do not give rise to senti-

ence, because they are not supplied with sensor nerves. Thus, the hair and nails are not furnished with nerves, and so they may be cut off without causing pain. Some parts of the brain itself, not being supplied with nerves of sense, may be cut out without pain.

(2) The **external** conditions are the application of agents adapted to excite the sensor nerves through their terminal organs and so to send an impression to the brain, where the sentient states are realized in consciousness; and also the mechanical, chemical, and vital changes produced in the tissues of the body itself by external causes.

3. Conditions of Pleasurable Sentience.

All use of the physical organism involves a certain destruction of tissue and thereby necessitates repair to make good the waste. The following formula of pleasurable sentience is given by **Grant Allen**: "Pleasure is the concomitant of the healthy action of any or all of the organs or members supplied with afferent cerebro-spinal nerves, to an extent not exceeding the ordinary powers of reparation possessed by the system." This statement may be accepted as the best formula that can now be given of the *conditions* under which pleasure arises from physical sensation. It must not, however, be accepted as a *definition* of pleasure.

Bain has formulated the connection of feelings with physical states in the following law: "States of pleasure are concomitant with an *increase*, and states of pain with an *abatement*, of some, or all, of the vital functions."[1] In commenting on this statement, **Allen** says: "If pleasures were the psychical concomitants of an *increase* of some of the vital functions, then our two greatest, if not

only, pleasures ought to be digestion and repose after exertion; whereas these are really only minor and very indefinite pleasures."[2] He then continues, after stating the formula cited above, "pleasure on the whole is chiefly referable to a healthy state of the organism generally, one in which every part is enabled to perform its proper functions unimpeded, and no undue call is made upon any single organ or member. . . . And if, in such a condition of body, we give free play to all the activities of the system, nervous and muscular,—as in taking a morning walk on a sunny day in spring, after a good night's rest and a hearty breakfast,—we receive a massive impression of pleasure which corresponds partially [in amount?] to the massive discomfort of fatigue, inanition or anæmia. . . . While Professor Bain refers pleasure to an *increase* in the efficiency of the organism, it may better be regarded as the concomitant of a *normal amount of activity* in any portion or the whole of the organism. Or, to employ once more the metaphor of the steam-engine, we may say that pleasure results, not from the act of coaling, watering or oiling, but from the harmonious working of all the parts. And, as all activity implies a waste of tissue (since it is dynamically equivalent to the passage of potential into kinetic energy), pleasure is to a certain extent concomitant with a *decrease* of vital function. The limit at which such waste of tissue ceases to be pleasurable and begins to be painful is, I believe, the point where the waste exceeds the ordinary powers of repair."[3]

4. Conditions of Painful Sentience.

Pains are of two classes, (1) **acute** and (2) **massive.** An acute pain is sharp and either sudden or intermittent. A massive pain is dull and continuous. The pulling of a tooth produces acute pain. A tooth-ache also is sometimes an acute pain, frequently felt in recurrent throbs. A head-ache from indigestion is usually a massive pain, continuing for some time. Acute pains, as a class, accompany the action of destructive agencies, as cuts, burns and bruises. Massive pains usually accompany excessive or obstructed functional action, as when one strains

the muscles by over-use or confines the body for some time to one position.

"If we take a rapid survey of the principal varieties of physical pain, the first point which strikes us is that the greater part of them, and especially the most intense, are the concomitants of a violent dismemberment in some one of the tissues. Of all pains with which we are acquainted, the strongest are those which accompany the severance of an actual sensible portion of the body, as in the amputation of a limb, the excision of an ulcer, or the removal of a scalp. The disruption from the body of a much smaller member is also extremely painful, as, for example, the loss of a nail or the drawing of a tooth. To pinch off a small piece of skin (below the epidermis) or to pull out a hair occasions a considerable smart. In short, to tear or cut away from the body any one of its constituent tissues is one most conspicuous cause of pain. Again, merely to sever the tissues without actual dismemberment is also painful. Take as instances wounds, cuts, pricks and scratches. To pare or break the nails below the quick, to pull open a sore, to have the face or lips chapped, are other similar cases. Disruption of tissue is, therefore, a second and closely-allied cause of pain. Disintegration of any part of the body owing to causes not so directly mechanical is accompanied by the same subjective states: as in burning off a finger, having the feet frozen so that the joints drop off, destroying the skin and muscles with a corrosive acid, and so forth. Like mental manifestations occur when the tissues are bruised, crushed or broken. Of this we have every-day experience in blows, falls, kicks and rubs. Here we can easily see that there is still disintegration, though of smaller tissues. This is proved by the concentration of blood in the area of disruption which causes the flesh to appear 'black and blue,' and shows that the delicate epithelium of the capillaries has been broken and an extravasation has taken place; by the weal, raised after a smart tap from a whip; and by blisters which follow friction and testify to the separation of the skin from the subjacent tissues by allowing an effusion to collect in the interstice. All these cases are produced by the interference of external bodies with the organism. . . . In other cases, the evidence only shows a tendency to disruption rather than its actual presence. Whenever a mass of connective tissue is exposed to a violent strain, the nerves which it contains are

pinched or twisted and arouse an intensely painful sensation."[4] In still other cases, we can discover a decomposition of tissue, as in the case of excessive muscular exertion, or an insufficient nutrition, as in the case of nervous debility, as the accompaniments of pain. Here also there is molecular disruption in the tissues of the body.

5. The Range of Sensation.

If we follow the rise and progress of any particular sensation, we shall discover (1) that its external cause must reach a certain degree of **intensity** before the "threshold of consciousness" is reached, that is, before it can produce a sensation (page 60). If the sensation continues to increase in intensity, we find (2) that, at a certain point, there is a **transition** in its quality, a painful sensation becoming pleasurable, as when the discomfort caused by a dim and trying light gives way to pleasure when the light becomes stronger; or a pleasurable sensation becoming painful, as when a light becomes so strong as to dazzle and hurt the eye. This transition is very marked in sensations of temperature. Finally, if a sensation, pleasurable at first, simply continues, without change of intensity, we find (3) that, after some time, its **duration** alone renders it disagreeable.

In the sphere of sensations of sound, for example, a low, almost indistinguishable sound is very disagreeable. When it becomes a little louder, so as not to strain the attention, it loses its disagreeable quality. But when it becomes very loud it pains the ear. A very slight stimulus divides the consciousness and the efforts of attention are constantly defeated. The soul fails to find an object for its interpretation. A very great stimulation overtaxes the powers and occasions pain. Pleasure results only from the moderate stimulation of the sense-organ, affording satisfaction to the interpreting power and still not producing a destructive disturbance in the organ. This holds of all the senses.

6. The Laws of Pleasurable Sensation.

There are two principles, or laws, of pleasurable sensation which are of considerable practical importance. They are:

(1) The Law of **Variety.**—When any sense-organ is over-taxed, either by too intense or too prolonged activity, the sensations become disagreeable. Hence, variety is necessary to a pleasing effect. This law of variety furnishes an important principle of art, in so far as art appeals to the senses. Monotony of tone, form, and color is never pleasing. It must be broken up by variety.

(2) The Law of **Harmony.**—The simultaneous demand for attention in many, especially in opposite, directions, is disagreeable, because every sensation is interrupted before it is fully realized. Hence, a certain harmony is necessary for a pleasing effect. Discordant tones, incongruous forms, and inharmonious colors are even more disagreeable than monotony. Unity is, therefore, an important principle of art. Some have held that the whole secret of beauty lies in **variety in unity.** Of merely sensuous beauty this is certainly true, but we shall soon see that ideal beauty involves much more. Variety relieves our powers from too intense and prolonged exertion, while harmony secures unity in their action.

The distinction between sensuous and ideal beauty is a real and an important one. It will, perhaps, be more evident when we have noted more precisely the difference between sensations and sentiments, but we may be able to promote the apprehension of that difference by introducing some statements here. Certain sounds, forms, and colors are pleasing in themselves, wholly apart from their combinations and the meaning which those combinations reveal.

Take, for illustration, two human voices, one pure and soft, the other aspirate and metallic. The same musical note sounded by these two voices will affect us differently. Take, now, the more pleasing of these two voices. Let it begin at a pleasing note and run up the scale, and it will finally reach a point where it will become disagreeable. Such isolated tones are simply sensuous elements. They have a beauty of their own. The same may be said of forms. There are ugly and there are pleasing forms. The same is true of colors. All these constitute elements of sensuous beauty in the objects which possess them. Their pleasing quality depends upon their adaptation to produce a normal activity in the sense-organs. Certain tones awaken an agreeable stimulation in the auditory organs. Certain lines, particularly curved lines, produce an easy and diversified activity in the visual organs, uniting variety and harmony; while others require abrupt movements or a continuous activity in one direction. Certain colors are called "harmonious," as blue and yellow, red and green, and are said "to go well together." Such combinations are sometimes spoken of as having a "restful" effect upon the eye. We cannot here enter upon a detailed explanation of these relations, but inquiry shows that such combinations of color are in a strict and literal sense "restful," employing now this now that portion of the optic organ. There is, then, a sensuous beauty, or beauty that appeals to the senses. Milton perceived this element when he described effective poetry as "Simple, *sensuous* and passionate." But this sensuous element is only, as it were, the body of beauty. The idea, the product of the transforming power of Intellect, furnishes the ideal element, the soul of beauty. To this we shall refer in a subsequent section.

7. The Association of Sensations.

We have seen how difficult it is to reproduce sensations without the presence of the objects causing them (pages 97, 98). We are able, however, to form and to reproduce *ideas* of sensations. These are never quite the same as the sensations themselves (page 68). Thus, we cannot produce in consciousness a sensation of a tooth-ache or of

the scent of a flower, but we have ideas of those sensations. Such ideas are associated, like all other ideas, and so we always think of some experiences as being pleasant and of others as painful. Hence, certain trains of ideas produce pleasure and others pain. This pleasure and this pain are ideal, but constitute for us important elements of experience. We seek the pleasant and shun the painful, and thus, at last, through association of feelings, establish preferences for certain objects and ideas, and dislikes for others.

Language has the power to suggest trains of associated ideas and, through these, to stir and move the feelings. Much of the influence of the orator and the poet depends upon the subtle associations connected with our sensuous experience. Observation shows that the most effective orations and poems, in their influence upon the feelings, are those in which words suggesting sensations abound. This is probably the origin of the term "sensational," used to designate a type of writing and speaking that depends largely upon this sensuous element in style for its effects. Hence, one of the definitions of the "sensational" is, "done for effect." While our rational nature resents being thus practiced upon, there is no doubt that the "effect" sought is actually produced and that audiences are "stirred" and "fired" by "words that burn."

8. Relation of Sensations to Education.

The relation of sensations to education is twofold: (1) sensations furnish a basis for the government of a child, and (2) sensations must themselves be governed through the child's higher nature.

(1) **Government of the Child through his Sensations.**— All government begins with the assumption that pain will be avoided and pleasure will be sought. The child will follow the line of least resistance. The meaning of

punishment is pain ; the meaning of reward is pleasure. At first, the only sphere of either pleasure or pain for a human being is that of his sensations. Hence, he is primarily governed through these alone. Most legislators hold that this, which is unquestionably true of all at the beginning, never ceases to be true of the majority of men. A great jurist has said, "Man is the subject of two sovereign masters, pain and pleasure." [5] The first government, at least, must be corporal. As the soul expands and rises into the sphere of psychical pleasures and pains, the government should rise into it also. If it does not, the subject of the government is degraded. A being is best governed on his highest plane.

(2) **Government of the Sensations through the Child.**— A point is reached in the development of a human being when the process of governing him through his sensations should pass into the government of his sensations through his higher nature. He must be taught obedience, patience and fortitude. He can no longer follow the line of least resistance without peril of degradation. He must obey, although obedience requires pain. He must be patient, although patience involves the mastery of feeling. He must be firm, although suffering accompanies fortitude. Government must now be transferred to the realm of Reason and Conscience. How can this transfer be made ? It can be made only by eliciting a consciousness of the superior nature. This can be accomplished by assuming its existence, by appealing to its authority, and by administering rewards and punishments in the terms of the nobler nature. If government is to be rational and moral, its punishments must be rational and moral also.

In this section, on "Simple Sentience," we have considered :—

1. ***Kinds of Simple Sentience.***
2. ***Conditions of Simple Sentience.***
3. ***Conditions of Pleasurable Sentience.***
4. ***Conditions of Painful Sentience.***
5. ***The Range of Sensation.***
6. ***The Laws of Pleasurable Sensation.***
7. ***The Association of Sensations.***
8. ***Relation of Sensations to Education.***

REFERENCES : (1) Bain's *The Senses and the Intellect*, p. 283. (2) Grant Allen's *Physiological Æsthetics*, p. 20. (3) *Id.*, pp. 21, 22. (4) *Id.*, pp. 6, 7. (5) This is the assumption on which Jeremy Bentham founds his *Principles of Morals and Legislation.*

SECTION II.

APPETITE.

1. Appetite Distinguished from Simple Sentience.

Appetite is distinguished from Simple Sentience by two characteristics. They are :

(1) **Appetency,** which is a tendency to seek for some object or to perform some act when the appetite is aroused. Thus, the appetite of hunger includes, in addition to the simple sentience of innutrition, the tendency to seek and devour food. Provision is made in our constitution for a certain activity whenever the appetite is aroused. This activity is not an effort of intelligence but an inborn impulse, or instinct.

(2) **Periodicity,** which attends all the appetites, while

simple sentience is merely occasional. It seems to be governed by a law of the organism itself. Hunger, for example, returns at intervals more or less regular, according to habit. If the habit of taking food is regular, the period is quite uniform.

The difference between appetite and instinct should be noted. It is well drawn by **Mark Hopkins** (1802–1887): "The appetite craves, instinct directs. The appetite is presentative, the instinct is regulative." [1] It may be added that this direction is a blind, not a consciously intelligent, direction. Appetite makes us conscious of a need, instinct directs us how to supply it. It implies a correlation of means and ends, but it is not a rational correlation resulting from our intelligence. The nature of instinct will be more explicitly discussed in another connection.

Appetite must not be identified with **feeling as a mere incentive to action.** **Bain** says: "If a spur to action were to constitute appetite, all our pains and pleasures would come under this designation. But the appetites commonly considered are a select class of feelings, and are circumscribed by the following property—namely, that *they are the cravings produced by the recurring wants and necessities of our bodily, or organic, life.*" [2]

2. Natural Appetites.

The following are the most definitely marked natural appetites:

(1) **Hunger.**—The waste of the bodily tissues requires to be constantly repaired by food, which supplies new materials for assimilation. The securing of food is, for the higher organisms, a complicated act requiring the directing power of mind. The conscious craving leads us to provide food which, when before us, we instinctively appropriate to the needs of the body. Instinct teaches us what we need, intelligence enables us to procure it. As the organs for the reception of food are of limited capacity,

the supply has to be taken after short intervals, so that the craving for food becomes periodic.

"In the case of hunger, as in most of the appetites, there is **a double spur to the taking of food**; first, the stimulus of uneasiness, and next the impulse arising out of the pleasure of eating. It is well understood that these two things are quite different, and on their difference hangs the whole art of refined cookery. Very plain food would satisfy the craving for nutrition, but there is a superadded pleasure which we have to cater for. The one is the appetite in its strictest signification and as found in the lower animals; the other we may call a desire, because it supposes the remembrance and anticipation of positive pleasure, like the desire for music or for knowledge."[3] The appetite proper belongs to the sphere of sensations; as desire, it is the concomitant of certain ideas. The interrelation of appetite, consciousness, and instinct becomes clear the moment we consider their dependence. If there were no conscious craving, the intelligence could not be brought to minister to the preservation of the body. If there were no instinctive tendency to seek food, the intelligence would merely know itself as the subject of a craving without direction toward the needed object. Instinct directs the conscious craving toward its object and intelligence devises means of procuring it.

(2) **Thirst.**—This appetite hardly needs to be distinguished from hunger, for it is simply the craving for liquid food. It is more imperative than the appetite for solid food, and demands more frequent satisfaction.

(3) **Suffocation.**—This is the appetite for air. The lungs are the organs in which the blood receives its supply of oxygen and through which carbonic acid gas is emitted. They demand a constant supply of pure air. If for any cause it is withheld, a painful feeling is produced and the organs seek their needed supply by rapid gasping, whereby they extract from the air a larger proportion of oxygen.

"Observe a man threatened with suffocation: remark the sudden and wild energy that pervades every feature; the contractions of the throat, the gasping and the spasmodic twitchings of his face, the heaving of his chest and shoulders, and how he stretches his hand and catches like a drowning man. These are efforts made under the oppressive intolerable sensation at his heart; and the means which nature employs to guard and preserve the animal machine, giving to the vital organ a sensibility that excites to the utmost exertion."[4]

(4) **Weariness.**—This is the craving for a new supply of energy consequent upon the exhaustion of the amount previously possessed. It is a tendency to seek repose and sleep. Sometimes, however, sleep is rendered impossible by the degree of exhaustion. The weariness occasions an excitation that prevents sleep. Muscular exhaustion, unless positively painful, usually induces sleep, but nervous exhaustion may so excite the system as to induce wakefulness.

"The fact of periodic recurrence is in no case more strikingly exemplified than in **sleep.** After a certain period of waking activity, there supervenes a powerful sensation of repose. If we give way to it at once, the state of sleep creeps over us and we pass through a few moments of agreeable repose into unconsciousness. If we are prevented from yielding to the sleepy orgasm, its character as an appetite is brought out into strong relief. The voluminous uneasiness that possesses all the muscles and organs of sense, stimulates a strong resistance to the power that keeps us awake; the uneasiness and the resistance increasing with the continued refusal of the permission to sleep, until the condition becomes intolerable, or until the reaction ensues, which drives off the drowsiness for some time longer. The overpowering influence of drowsiness is well seen in infants."[5]

(5) **Restlessness.**—This is the opposite of weariness. It is the appetite for activity. When the supply of energy is superabundant, there is a craving for an opportunity to work it off. It is shown in the playfulness of children

and all young animals. Persons accustomed to any form of exercise or of excitement find themselves wretched when the supply of surplus energy accumulates without the accustomed opportunity for expending it. Action and companionship are then demanded, and through them relief is afforded.

We have no word in the English language to express precisely what is meant by the French word "**ennui.**" It is a state of depression from having nothing to do, and the French, characteristically vivacious and active, have found this name for it. It is a common experience whenever there is little to occupy the attention. The silence of the country is disagreeable to those who are accustomed to the noises of the city, unless they find compensation in the charms of nature. Every sense-organ demands its accustomed stimulation. Silence and solitude are enjoyed only by those minds which have an activity of their own independent of sense-impressions. The thoughtful and reflective can be their own companions.

(6) **Sexual Passion.**—This is one of the most potent appetites. When united with other feelings of a higher order, such as the æsthetic appreciation of beauty, the desire for congenial companionship, the appreciation of home, the tenderness of personal affection, and the moral sentiments that arise from the sacred relation of marriage, it becomes the bond of society and a potent factor of civilization. It is the one human appetite which demands another human being for its satisfaction, and hence has a peculiar moral and social character.

3. Acquired Appetites.

We have treated thus far of the natural appetites. These are implanted by nature in the organization of man for his preservation. There are, however, other appetites

which are acquired. The most common forms of acquired appetites are those which have for their end the artificial stimulation of the nervous system. Tobacco, alcohol, and opium are the favorite drugs employed for this purpose. At first they affect the system disagreeably, but after a time the stimulation which they afford becomes an object of desire. The use of such drugs finally creates a periodic, and in many cases an almost incessant, demand.

The use of a stimulant is within the sphere of voluntary action; the effect it produces is wholly beyond this sphere. An acquired appetite is not always so much the result of an act of Will as it is the result of physical action. One who begins the use of stimulants seldom *intends* to acquire a dominating appetite. He is usually astonished, possibly distressed, when he first discovers that he is in bondage to it. He tries to escape responsibility by saying he never intended to become a slave to his appetite. The psychological history of a destructive appetite usually involves no psychical action whatever, simply *inaction*. Not to resist, is to surrender; to surrender, is to permit the soul to become the slave of the body. Here, as everywhere, "Eternal vigilance is the price of liberty." The craving for alcohol requires no voluntary act to establish it as a disease beyond all control and beyond all cure. If not positively forbidden to act, the physical cause accomplishes its effect as inevitably in the brain as in a test-tube. The only security is in keeping the cause so far from the body that its properties do not affect it.

4. Inherited Appetites.

Appetites acquired by one generation are sometimes transmitted to following generations, having all the force of natural appetites. There is evidence that acquired peculiarities of natural appetite, such as craving for certain particular kinds of food, are capable of inheritance. The artificial appetites are also transmitted, though frequently in a somewhat modified form. Whoever creates

an artificial appetite affects his posterity as well as himself. Although he may limit indulgence within what he may consider the bounds of moderation, he can have no assurance that all who derive the appetite from him will have this power of control also.

"The passion known as **dipsomania**, or alcoholism, is so frequently transmitted that all are agreed in considering its heredity as the rule. Not, however, that the passion for drink is always transmitted in that identical form, for it often degenerates into mania, idiocy and hallucination. Conversely, insanity in the parents may become alcoholism in the descendants. This continual metamorphosis plainly shows how near passion comes to insanity, how closely the successive generations are connected, and, consequently, what a weight of responsibility rests on each individual. 'A frequent effect of alcoholism,' says Dr. Magnus Huss, 'is partial or total atrophy of the brain; the organ is reduced in volume, so that it no longer fills the bony case. The consequence is a mental degeneration, which in the progeny results in lunatics and idiots.'" [6]

5. The Control of Appetite.

Man is the only animal who has the intelligence to make the pleasure afforded in the gratification of appetite a distinct object of pursuit. He does this through his power of conception, by which he forms a concept of pleasure as an end of effort and, accordingly, makes "provision for the flesh, to fulfill the lusts thereof." The animals less intelligent than man, not possessing this power, do not pursue pleasure as an end; but, when their appetites are satisfied, are content to await their natural return. Man's intelligence was given him as a guide, not as a servant of artificial appetite. He can use it for its natural end, the discovery of truth, or he can pervert it for self-gratification. He realizes his dignity as a personal being only

when he governs his appetites by the laws of Reason and Conscience, and, as a rational master, refuses to surrender himself to a sensuous slavery.

In the lower animals, it is believed, appetite has a general trustworthiness. It certainly is not so in man. Error is more common than accuracy in the blind impulses of mere appetite. Almost all medicines, which science prescribes, appetite rejects. It is, indeed, possible that appetite is often right in its protests against medicaments, but certainly we cannot claim that appetite is a safe criterion. Whence this distinction between the appetites of man and the lower animals? It may be attributed partly to the presence of acquired and inherited appetites in man, partly to his concept of the pleasurable as the end of appetite, partly to a purpose that he should be compelled to employ his intelligence where the mere animal is served by instinct.

6. Relation of Appetite to Education.

Appetite has two important practical bearings upon education: (1) as affording a serious impediment to mental improvement, and (2) as furnishing opportunity for strengthening the power of self-control.

(1) **Appetite as an Impediment to Education.**—We have only to reflect a little to see that the appetites are obstructions to the development of the mental powers. All mental application, beyond what is purely spontaneous, is, at first and apart from its fruits, disagreeable. The sensations of weariness and restlessness must be put out of consciousness before much reflection can be accomplished. These sensations absorb the attention and distract it from the process of learning. The child must be made to sit still, to forget his body, and to attend to the teacher's words. It is a struggle of mind against matter. It never wholly ends and the mind is never the complete victor.

The spontaneous activities of the child may be summed up under the word "play"; the reflective efforts, under the word "study." Play is easier than study, because play calls out action along established lines of least resistance, while study involves a new kind of action. The partial victory that mind wins over the body is won only gradually and by ingenious devices and much patience on the part of the teacher. How to abstract the child's attention from his body and fix it upon his work, is the problem which the teacher of children has to solve.

(2) **Appetite and Self-control.**—The animal cannot study, because it has no power over its appetites. It lives in the periodic round of its sensations and has no power to appreciate motives above them. The child also is incapable of self-directed study until, by development, he comes to the exercise of his superior powers. When he can separate the future from the present and appreciate the meaning of ideas, he becomes capable of controlling his activities, and by an act of Will withdraws attention from his physical cravings and directs it to facts and principles. Every victory over his appetites strengthens his power of self-control. Finally, he can study even when his brain is weary and can quiet his restless muscles. But this triumph is merely relative. The majority win a very imperfect victory. Only a few obtain a high degree of self-mastery. None are completely liberated from the conditions of organic appetency. Physical cravings set limits to all higher activity, and the bodily life demands that the natural appetites shall have their normal indulgence. If they do not receive it, the body enters its protest in disease.

In this section, on "Appetite," we have considered :

1. ***Appetite Distinguished from Simple Sentience.***
2. ***Natural Appetites.***
3. ***Acquired Appetites.***
4. ***Inherited Appetites.***
5. ***The Control of Appetite.***
6. ***The Relation of Appetite to Education.***

REFERENCES : (1) Mark Hopkins' *Outline Study of Man*, p. 205. (2) Bain's *The Senses and the Intellect*, p. 240. (3) *Id.*, p. 243. (4) Sir Charles Bell's *Anatomy and Philosophy of Expression*, p. 91. (5) Bain's *The Senses and the Intellect*, p. 241. (6) Ribot's *Heredity*, pp. 85, 86.

CHAPTER II.

SENTIMENTS.

THE THREE CLASSES OF SENTIMENTS.

Sentiments are of three kinds: (1) **Emotions,** which are feelings of internal excitement in the soul, and might be called "commotions" if it were not for the fact that they have a tendency to discharge themselves outwardly by physical expression; (2) **Desires,** which are feelings of internal craving in the soul, demanding something for their satisfaction; and (3) **Affections,** which are feelings of internal fullness in the soul, going forth toward some object outside of self, on account of some quality in the object. Each of these forms of sentiment will be considered in a separate section, to be followed by a discussion of the **Development of Sensibility.**

SECTION I.

EMOTION.

1. The Nature of Emotion.

Emotion (from the Latin *e,* out of, and *movĕre,* to move) is an excitation in the soul arising through the apprehension of ideas and tending to find outward expression. It differs from sensation, as all sentiments do, in having a

psychical rather than a physical origin. It is distinguished from other sentiments in tending to express itself outwardly, as in laughter or tears. Desire, on the other hand, is an internal *craving*. Affection is like emotion in being an internal *fullness*, but has a definite outward object, while emotion has not. We may best illustrate these differences by typical examples. Grief is an emotion, consisting in a general disturbance of a painful kind in the soul, usually caused by the loss of some dear object and tending to express itself in sadness of countenance and tears. Ambition is a desire, consisting in a craving for the possession of power, a state of uneasiness which is not ended until the craving is satisfied. Pity is an affection, being a state of interest in the distress of another, a fullness that goes out toward a definite object. These outline distinctions will be more clearly apprehended as we proceed to discuss the various forms of sentiment.

2. The Expression of Emotion.

While it is not essential to the existence of emotion that it should be expressed, all emotion tends to find expression. An emotion and its expression must not, however, be identified. An emotion is a form of consciousness. The expression of an emotion is a movement, or series of movements, in the physical organism. The visible movement in the organism is certainly not the cause of the emotion, but its effect. The emotion itself cannot be localized in any part of the body, as a sensation can, but is simply a conscious state. Grief, for example, is such a state. Tears and facial contractions, the expressive signs of grief, are physical effects. The soul reacts upon the

body involuntarily and sets in motion the motor mechanism. How a conscious state can produce a physical change is quite as much beyond our knowledge as how a physical movement can produce a state of consciousness in an act of Sense-perception. The particular forms of expression will be noted in connection with the description of each emotion.

Darwin has attempted to account for the phenomena of expression by the supposition that they are results of organic action, without reference to expression as a special end or purpose. He refers the various forms of expression to the following **three principles**:

I. "**The principle of serviceable associated Habits.**—Certain complex actions are of direct or indirect service under certain states of the mind, in order to relieve or gratify certain sensations, desires, etc.; and whenever the same state of mind is induced, however feebly, there is a tendency through the force of habit and association for the same movements to be performed, though they may not then be of the least use. Some actions ordinarily associated through habit with certain states of the mind may be partially repressed through the Will, and in such cases the muscles which are least under the separate control of the Will are the most liable still to act, causing movements which we recognize as expressive. In certain other cases the checking of one habitual movement requires other slight movements; and these are likewise expressive.

II. "**The principle of Antithesis.**—Certain states of the mind lead to certain habitual actions which are of service, as under our first principle. Now when a directly opposite state of mind is induced, there is a strong and involuntary tendency to the performance of movements of a directly opposite nature, though these are of no use; and such movements are in some cases highly expressive.

III. "**The principle of actions due to the constitution of the Nervous System**, independently from the first of the Will, and independently to a certain extent of Habit.—When the sensorium is strongly excited, nerve-force is generated in excess and is transmitted in certain definite directions, depending on the connection of the nerve-cells and partly on habit; or the supply of nerve-force may, as it appears, be interrupted. Effects are thus produced which we

recognize as expressive. This third principle may, for the sake of brevity, be called that of the direct action of the nervous system."[1]

No one can doubt, after reading Darwin's explanatory chapters, that these three principles explain many of the expressive actions of both man and animals. Design is not, however, clearly excluded from that constitution of the nervous system which renders certain expressive movements possible. There is no disproof of Sir Charles Bell's view "that man has been created with certain muscles specially adapted for the expression of his feelings." That certain muscles are so adapted, there is no doubt. It would require great boldness to affirm that they were not intended to be so.

3. The Production of Emotion.

Emotion is produced as the accompaniment of certain ideas. A telegraphic dispatch is the occasion of joy or sorrow, according to the ideas it conveys; and through these it produces the most opposite physical effects. The cause of the difference is certainly not any physical attribute of the telegraphic dispatch. The writing on the paper produces no effect, except upon a mind that understands its contents, that is, the emotion is produced only as the concomitant of ideas. The poet and the orator do not awaken emotion by telling us that we *ought* to have a certain kind of feeling, or by advancing *arguments* to prove that it is suitable. They present certain ideas which awaken the desired emotion as their spontaneous accompaniment. **Ideal presence** is the condition of emotion. The objects to which the ideas relate may be real or unreal; the effect is the same, if we surrender ourselves to the illusion. If a real sight would make us sad, a vivid description, even though it be fictitious, will have a similar effect. The emotion arises as an inexplicable accompaniment of certain ideas. Imagination

is the idealizing activity which produces emotions by creating the ideas which they accompany. It is, therefore, in a special sense, the faculty of the poet and the orator.

William James has advanced the doctrine that an emotion is identical with the feeling of the bodily changes by which it is expressed.[2] He admits, however, that, according to common sense, we first feel an emotion and afterward experience its bodily expression. While the majority of mankind will, probably, continue to accept the verdict of common sense, it is certainly true that **a particular emotion may be produced by actions expressive of the emotion.** As he forcibly says: "Every one knows how a panic is increased by flight and how the giving way to the symptoms of grief or anger increases those passions themselves. Each fit of sobbing makes the sorrow more acute and calls forth another fit stronger still, until at last repose only ensues with lassitude and with the apparent exhaustion of the machinery. In rage, it is notorious how we 'work ourselves up' to a climax by repeated outbreaks of expression. Refuse to express a passion and it dies. Count ten before venting your anger, and its occasion seems ridiculous. Whistling to keep up courage is no mere figure of speech. On the other hand, sit all day in a moping posture, sigh, and reply to everything with a dismal voice, and your melancholy lingers. There is no more valuable precept in moral education than this, as all who have experience know: if we wish to conquer undesirable emotional tendencies in ourselves, we must assiduously, and in the first instance cold-bloodedly, go through the outward motions of those contrary dispositions we prefer to cultivate. The reward of persistency will infallibly come, in the fading out of the sullenness or depression and the advent of real cheerfulness and kindliness in their stead."[3] All this assumes, however, that we *know* these actions. The emotions then arise as accompaniments of the *ideas* thus generated. A funny book will do the same for us that a good laugh will: it will provoke the emotions of mirth, which will then, if strong enough, make us laugh. Can we suppose that a funny story would make any one laugh except through his consciousness, that is, through his ideas?

4. Kinds of Emotion.

Emotion appears in four forms sufficiently distinct to admit of being grouped into separate classes : (1) **Egoistic Emotion,** or that which arises as the concomitant of ideas relating directly to *self and the interests of self;* (2) **Æsthetic Emotion,** or that which arises as the concomitant of ideas of *nature and art;* (3) **Ethical Emotion,** or that which arises as the concomitant of intentional actions, viewed as in, or out of, harmony with *moral law;* and (4) **Religious Emotion,** or that which arises as the concomitant of the idea of personal power and perfection in the *Supreme Being.*

We have already seen why it is difficult to classify the feelings, and it is not pretended that this classification is either exhaustive or without cross-divisions. It is offered as a natural and practically useful classification, and has the advantage of employing language in its accepted meaning, without straining words to fit an arbitrary manner of division.

5. Egoistic Emotions.

These emotions may be grouped as follows :

(1) **Emotions of Joy.**—These are all pleasurable. They are of different degrees of intensity, and we have many words to express this variation. We may distinguish (*a*) **Contentment,** a low form of joyful emotion, tending to express itself in a calm and placid countenance ; (*b*) **Cheerfulness,** a greater degree of Joy, tending to express itself in playful movements, and snatches of song and laughter ; and (*c*) **Rapture,** an ecstatic state of Joy, tending to express itself in very demonstrative ways, as in

exclamations, leaping and dancing. Joy marks a transition from a lower to a higher idea of self-perfection.

(2) **Emotions of Sorrow.**—These are disagreeable, the opposites of the joyful emotions. Their principal forms are (*a*) **Depression,** which is a vague feeling of unhappiness, manifested in a dull and lifeless countenance; (*b*) **Dejection,** which is a deeper sadness, indicated by the downcast eye, lengthened features, and a lack of interest in surroundings; and (*c*) **Grief,** which is a strong and agitating distress, expressed by floods of tears and convulsive movements of the face, which even strong men cannot always resist. In its most intense form, Grief does not flow out in tears, but stupefies and transfixes the whole man. The effort to repress it, or the highest degree of it, may lead to an injury to the brain. Sorrow marks a transition from a higher to a lower idea of self-perfection.

As these two kinds of emotion, the joyful and the sorrowful, are opposite in nature, so also they tend to express themselves in opposite ways. Joy expresses itself in the levity (from the Latin *levis*, light), or uplifting, of the features of the face; Sorrow, in the gravity (from the Latin *gravis*, heavy), or drawing down, of the features. An examination of Figure 19 shows the arrangement of the muscles which give expression to the face. Those of the region round the mouth are more fully exhibited in Figure 20. When these muscles are allowed to hang by their own weight, under the influence of gravity, they express Sorrow. When they are lifted by the action of nervous and muscular force, they express Joy. The effect of their action is shown in Figure 21. Regarding the matter now from the subjective side, Sorrow gives us a feeling of weakness; Joy, a feeling of strength. This feeling cannot always be a truthful report of our actual physical condition, because, without increasing our strength at all, a pleasant idea produces Joy within us, which we at once express by lifting up the downcast features. We can explain the transition only by an involuntary reaction of the soul upon the body, according as the ideas produce Joy or Sorrow. "In Joy,"

says **Sir Charles Bell,** "the eyebrow is raised moderately, but without any angularity; the forehead is smooth, the eye full, lively, sparkling; the nostril is moderately inflated and a smile is on the lips. In all the exhilarating emotions, the eyebrow, the eyelids, the nostril, and the angle of the mouth are raised. In the depressing passions it is the reverse. For example, in discontent the brow is clouded, the nose peculiarly arched, and the angle of the mouth drawn down."[4] "Writers of fiction, if also observers of nature, sometimes describe a man who has just received some depressing news—say, a heavy bill—as presenting a very long face. Can we, from actual observation and analysis, say that a long face is a mode of expression? . . . In a case where one side of the face is paralyzed by destruction of its motor nerve, the paralyzed side after a time drops under the action of gravity. In such a case I have demonstrated by measurement that the paralyzed side may be three-quarters of an inch longer than the other side when in action. The actual length of the face can then be increased if the muscles are paralyzed; so also if they be relaxed from want of nerve-force coming to the muscles. A face that is long, owing to nerve-muscular conditions, may be a direct expression of the brain condition; a relaxed condition of the facial muscles, allowing the face to fall and lengthen, is the outcome of feeble nerve-currents coming down from its nerve-centres. A long face may, then, indicate weakened brain force, and this often accompanies the mental condition following from a sudden disappointment. Another factor in producing a long face as a temporary condition, is the falling of the lower jaw."[5] Ideas seem in this case to react upon the brain very much as in the reaction of Phantasy (pages 90, 91).

(3) **Emotions of Pride.**—These give a certain pleasure to the mind. They accompany exalted ideas of self. Pride assumes the forms of (*a*) **Self-complacency,** (*b*) **Vanity,** and (*c*) **Haughtiness.** They all express themselves by an erect stature, a lifting of the features, and the stronger forms by the contraction of the eyebrows.

(4) **Emotions of Humility.**—Humility is the opposite of Pride. It accompanies a low idea of one's merits. It ap-

pears as (*a*) **Modesty**, (*b*) **Meekness**, and (*c*) **Lowliness.** These are manifested by blushing, the falling of the eyes, and, in the most intense forms, by the prostration of the body.

"A proud man exhibits his sense of superiority over others by holding his head and body erect. He is haughty (from the French *haut*, high), and makes himself appear as large as possible; so that metaphorically he is said to be swollen or puffed up with Pride. A peacock or a turkey-cock strutting about with puffed-up feathers, is sometimes said to be an emblem of Pride. The arrogant man looks down on others and with lowered eyelids hardly condescends to see them; or he may show his contempt by slight movements about the nostrils or lips. Hence the muscle which everts the lower lip has been called the *musculus superbus* (from the Latin *superbus*, proud)." [6] See Figure 20, *h*. There is another muscle called the *corrugator supercilii*, or wrinkler of the eyebrow (Figure 19, 22), whose agency in contracting the eyebrow in the expression of Pride has given us the word "supercilious." As the emotion of Pride is attended with a feeling of physical strength, so that of Humility is accompanied with a feeling of weakness. Hence, there is the tendency to bow the head and prostrate the body. The phenomenon of blushing is the usual expression of Modesty. **Darwin says: "Blushing is the most peculiar and the most human of all expressions.** Monkeys redden with passion, but it would require an overwhelming amount of evidence to make us believe that any animal could blush. The reddening of the face from a blush is due to the relaxation of the muscular coats of the small arteries, by which the capillaries become filled with blood; and this depends on the proper vaso-motor centre being affected. No doubt if there be at the same time much mental agitation, the general circulation will be affected; but it is not due to the action of the heart that the net-work of minute vessels covering the face becomes under a sense of shame gorged with blood. We can cause laughing by tickling the skin, weeping or frowning by a blow, trembling with the fear of pain, and so forth; but we cannot cause a blush, as Dr. Burgess remarks, by any physical means,—that is, by any action of the body. It is the mind which must be affected. Blushing is not only involuntary; but the wish

to restrain it, by leading to self-attention, actually increases the tendency." [7]

(5) **Emotions of Hope.**—Hope arises as the accompaniment of expected good. It gives firmness to the soul even in the presence of danger. It enlivens, cheers, and stimulates to action. Its forms are (*a*) **Self-confidence,** when personal action is necessary; (*b*) **Daring,** when danger has to be met, and (*c*) **Heroism,** when life has to be imperilled. Its characteristic modes of expression all indicate strength, as the erect form, the open eye, the composed features, and the eager attitude.

(6) **Emotions of Fear.**—Fear is the opposite of Hope. It accompanies expected evil. It is the soul's weakness. It may result also from bodily weakness. It is always painful, as Hope is pleasurable. Its forms are (*a*) **Anxiety,** (*b*) **Alarm,** (*c*) **Terror,** and (*d*) **Horror.** Its bodily signs are trembling and crouching, the opposites of the composure and erect posture of Hope. In its most intense forms it is paralyzing, rendering flight, to which it disposes, impossible.

The expression of Fear indicates a greater departure from the normal and customary bodily condition than the expression of Hope. The heart beats violently. The surface becomes pale. A cold perspiration exudes. The hairs on the skin stand erect and the muscles tremble. The respiration is quickened, the mouth becomes dry and the voice fails.

(7) **Emotions of Wonder.**—Wonder is the emotion produced by the unexpected. Its forms are (*a*) **Surprise,** (*b*) **Amazement,** and (*c*) **Awe.** It is expressed by suspended respiration, a dropping of the jaw, a fixed stare of the eyes, and an extending of the hands.

(8) **Sympathetic Emotions.**—We are so constituted that we share the emotions of others. Emotions, of whatever kind, communicated in this indirect manner, may be called Sympathetic. The word "**Sympathy**" is properly applied to any feeling corresponding with the feeling of another and occasioned by it. **Antipathy** is incompatibility of feeling, the opposite of Sympathy.

All emotion is contagious. The good or bad humor of a speaker influences an entire audience. Joy and Sorrow, Hope and Fear, are pervasive. Laughter excites laughter; tears provoke tears. A brave leader inspires his followers with his own courageous emotions; a routed regiment spreads panic through an entire army. We often value persons for their prevailing emotional states, for these have as powerful an influence as any personal qualities.

Emotional states are more easily modified than destroyed. The fountains of laughter and of tears lie very close together. It is impossible in many cases to check an emotion suddenly where it is very easy to change its character. One who is skilled in the management of the feelings never tries to destroy an emotion in an instant, but to divert and modify it. Like a powerful stream of water, emotion can be drawn into another channel, but it cannot be annihilated. All excitement must have its expression, but a modification of the emotion may render possible a new and unexpected outlet.

6. Æsthetic Emotions.

Æsthetic Emotion is the sentiment that arises in the soul as the concomitant of ideas of nature and art. This is different from the simple sentience that is produced by the contemplation of forms, colors and motions. Æsthetic sentiment is a highly intellectualized emotion, arising only in those who are capable of forming ideas and comprehending their meaning. Our æsthetic emotions may be classed according to the qualities that give rise to them. On this principle of classification they are as follows:

(1) **Emotions of the Comical.**—These depend principally upon the apprehension of some incongruity when no harm or danger accompanies it. If actual or possible injury results from an incongruity, very different emotions are produced, excluding those of the Comical, as Fear, Sorrow, Sympathy, etc. For example, if one slips and falls when walking confidently along, without injury of any kind, it seems comical; but if one is injured, the incongruity of the sprawling figure is not comical. Only the heartless can laugh at a misfortune. Emotions of the Comical are produced by (*a*) **Humor,** (*b*) **Wit,** (*c*) the **Ludicrous,** and (*d*) the **Ridiculous.** Humor is a genial play of ideas, provoking smiles and laughter. Wit is a startling revelation of an unexpected coincidence or resemblance and, when not severe, as it sometimes is, also provokes smiles and laughter.[8] The Ludicrous is something that we may laugh at without a serious loss of respect for it. The Ridiculous is something that we laugh at as unreasonable or insignificant.

The philosophy of the Comical presents a difficult and complicated subject. The tendency to laugh has been regarded by some, as by **Hobbes,** for example, as resulting from a feeling of superiority in ourselves or of contempt for others. This is true in the case of the Ridiculous, but, as **Coleridge** has said, is contrary to the facts in other cases.[9] **Aristotle's** definition of the cause of laughter is,—surprise at perceiving anything out of place, when the unusualness is not accompanied by a sense of serious danger. "Such surprise," adds Coleridge, "is always pleasurable."[10] We may safely say that incongruity without danger is usually comical, but, as we shall see, this requires some limitation. "Why do we smile," says **Herbert Spencer,** "when a child puts on a man's hat? or what induces us to laugh on reading that the corpulent Gibbon was unable to rise from his knees after making a tender declaration? The usual reply to such questions is, that laughter results from a perception of

incongruity."[11] But, as **Bain** says, "There are many incongruities that may produce anything but a laugh. A decrepit man under a heavy burden, five loaves and two fishes among a multitude, and all unfitness and gross disproportion; an instrument out of tune, a fly in ointment, snow in May, Archimedes studying geometry in a siege, and all discordant things."[12] He then notes "degradation" as a differentia of the Comical, but, certainly, we laugh at many things that involve no degradation. He thinks he finds the real essence of the Comical, however, in a "reaction from the serious." "So intense," he says, "among the majority of persons is the titillation arising from being suddenly set loose from this peculiar kind of restraint, that they are willing to be screwed up into the serious posture for a moment, in order to luxuriate in the deliverance. The comic temperament is probably determined by a natural inaptitude for the dignified, solemn, or serious, rendering it especially irksome to sustain the attitude of reverence, and very delightful to rebound from it."[13] There is much of this recognizable in our experience of the Comical, and yet we cannot identify the Comical with mere liberation from restraint. "Laughter," as Spencer says, "naturally results only when consciousness is unawares transferred from great things to small—only when there is what we call a *descending* incongruity."[14] As a physical expression, laughter is probably the discharge of nervous energy gathered for a serious effort and let loose along the lines of least resistance, finding vent in the muscular movements of the vocal and respiratory organs, and finally, if not previously expended, in the contortion of the whole body. But there may be laughter without the Comical, as in the laughter of hysteria. We must look deeper than this for its real cause as an expression of the emotions of the Comical. **Mivart** points out that there are two kinds of laughter, "one physical and sensuous, the other intellectual."[15] It is with the latter that we have to deal when speaking of the emotions of the Comical. These certainly depend upon an intellectual apprehension. Spencer cites as an illustration the arrival of a tame kid upon the stage in the midst of a tragedy, who, after staring at the audience, goes up to two reconciled lovers and licks their hands. This, he says, is a case of "descending incongruity." The nervous energy is forced into a "small channel" by this incongruity and discharges itself in laughter.[16] But Spencer's quantitative terms, "large channels" and "small channels" do not

apply to ideas. The apprehension of the "descending incongruity" is a *qualitative* distinction made by the Intellect. Immediately there rises in consciousness an emotion of the Ludicrous and laughter follows. How is the qualitative distinction of the "descending incongruity" translated into the movement of nervous energy toward a small channel, which it overflows and so expends itself in laughter? If we reply, the mind, expecting a serious and continuous exertion, gathers the nervous energy for such an effort, from which it suddenly ceases on the perception of the incongruity, leaving the accumulated force to expend itself along lines of least resistance, we assume that a qualitative distinction in the mind can produce a *quantitative* effect in the nervous system. It certainly cannot be believed that the kid on the stage produces any other *physical* effect at this juncture than at another. We seem, therefore, to have positive evidence that the soul reacts upon the body in an inscrutable manner, so that qualitative differences in consciousness produce quantitative differences in the nervous system.

(2) **Emotions of the Beautiful.**—As we have seen, there is a sensuous beauty which produces pleasurable sensations (page 236). There is also an ideal beauty, or perfection of type, which is apprehended only by the Intellect and is not explicable in terms of sensation. Of every kind of being there is the perfect type, not necessarily actually embodied in any known form, but existent for the Imagination. Such a perfect type is called "**the ideal.**" The contemplation of it affords a pleasure which we call the Emotion of the Beautiful. The realm of the ideal is the sphere of Art, which some who can enjoy merely sensuous beauty do not appreciate, because they have no ideals. Objects in which an ideal type is realized are called **Beautiful.** Those which contain some elements and suggestions only of the ideal are called **Graceful.** Those containing enough of the ideal to constitute a pleasing picture are called **Picturesque.** The appreciation of ideal beauty

is too intellectual to require marked bodily expression. The crude and ignorant are often struck with surprise on beholding an embodiment of beauty and give expression to their feelings by demonstrations similar to those of Wonder.

The theories of the nature of beauty are too numerous and complicated to admit of discussion here, and must be sought in special treatises on Æsthetics.[17] For the psychologist it is sufficient to resolve the emotion of the Beautiful into its constituents, and to determine its leading characteristics. Physical objects possess properties which affect us agreeably through our superior senses. We recognize, therefore, a **sensuous beauty,** or adaptation in things to affect us pleasantly through our sense-organs (page 237). But a pleasure of a different and higher order is afforded through our apprehension of ideas. **Plato** taught that certain types, or ideas, have existed eternally in the divine mind, and that these are absolutely perfect (page 142). Such ideas are essentially beautiful, and the embodiment of them renders the thing in which they are embodied beautiful. The emotions experienced in contemplating these perfect types are the emotions of the Beautiful. We may doubt the existence in the mind of such absolute and eternal ideas as Plato describes, for we find that the typical form of each race of mankind is the model of beauty for that race. The Hottentots do not admire the Venus de Medici, and Caucasians certainly do not regard a Hottentot Venus as a perfect type of womanhood. We may believe, then, that each race forms its own idea of a perfect type and that this varies with individuals, but we cannot doubt that there exists, for superior minds at least, an **ideal beauty,** which differs from sensuous beauty in being apprehended by the Intellect. From the apprehension of ideals rises the æsthetic judgment, which renders possible a theory of art and a science of criticism which can render a reason why one thing is beautiful and another is not. Analysis shows that æsthetic judgments are based on either (1) the intrinsic value of the idea expressed, or (2) the adaptation of the means employed to express the idea. Here is a foundation for rational art criticism. If ideas have no intrinsic value, all pleasure derived from art is merely sensuous. But we regard some ideas as intrinsically more important than others. The

idea of a man has a higher value than that of a leaf. The picture of an ideal man has a higher art-value, that is, if well expressed, has more beauty, than that of an ideal leaf. The idea of a perfect face is superior to that of a perfect foot. It contains more and nobler accessory ideas. It is an index of thought, feeling and character. It is a medium of moral and spiritual expression. Again, some forms, colors, and proportions are better adapted than others for the expression of ideas. **All art is purposive, or teleological.** It conveys meaning, and meaning implies an end and a plan for the accomplishment of the end. Art aims to discover elevated and intrinsically valuable ideas, and then to give them the most perfect expression. It implies purpose, order, adaptation, idealization. It is, therefore, supremely intellectual. Its constructive faculty is Imagination. The enjoyment of art also requires the exercise of Imagination, in order to interpret the idea of the artist. The mechanical accuracy of photography is not considered artistic, because it is blindly reproductive. Mere portrait-painting is not a high form of art, although it involves great skill of execution. Historical-painting is artistic mainly as it permits the use of Imagination in representing a vast and complicated scene in small compass and in selecting the proper moment for representation. The difference between a realistic imitation of a plate of oysters, even though they are so natural as to stimulate the appetite, and Raphael's Sistine Madonna, is not one of degree, but one of kind. Imitation is mechanical. Idealization is intellectual. It is idealization which constitutes the difference between imitative and creative art, between sensuous and ideal beauty. The emotions of the beautiful, in the proper sense, arise as concomitants of the ideal, which is the product of the idealizing process. The ideal derives its character from the embodiment of an idea in its typical, perfect, universal form. The ideal often suggests the infinite and the eternal, because it is a pure idea stripped of the mere accidents of place and time. Hence it satisfies all imaginative souls, and it may be truly said,—

"A thing of beauty is a joy forever."

(3) **Emotions of the Sublime.** — The emotions of the Sublime are produced when an idea manifests itself in excess of the form through which it is revealed, and so

expresses unwonted power. The Imagination is thus overwhelmed and Phantasy is unable to confine the idea to ordinary limits. The lowest form of sublimity is **Grandeur.** Its highest is **Awe.** The last is akin to Fear, and tends to express itself by the external signs of that Emotion.

Vast spatial extent, like that of the ocean, the Alpine mountains, and the celestial distances contemplated by the astronomer ; inconceivable duration, like that of the geological periods and the idea of eternity; irresistible power, like that of the tornado, the avalanche, and the volcano; terrific sounds, like those of the thunder, the tempest, and the earthquake; incalculable rapidity of movement, like that of the engulfing flame of a conflagration, the dash of the sea on the rocks, and the flash of lightning;—all produce the emotions of the sublime. So also do great daring and fortitude, especially in loyalty to truth or duty, giving rise to the **morally sublime;** as in the calm death of Socrates, the resolution of the Russians to burn their capital, and of the Hollanders to flood their country with the sea, rather than surrender to their enemies their homes and liberties. The sublime does not afford a province for art like that of beauty. The finite conditions of portraiture usually divest the sublime idea of its overwhelming character. If successfully represented, it fails to impress us, because in a picture time for reflection is possible and study suggests the presence of exaggeration, and when this is perceived "it is but a step from the sublime to the ridiculous." Whatever pleasure is derived from the sublime is transitional, and a picture or statue which expresses sublimity is liable under contemplation to appear horrible. If the climax of action is depicted, there is no room left for the play of Imagination, and we grow weary both of contemplating that crisis which affords no advance to something beyond and of beholding a situation which, if real, could not be long sustained. Art employs the sublime very sparingly and most successfully only as an offset to beauty. Hints and suggestions of the infinite, opportunities for the exercise of Imagination, are sometimes effective, as, for example, an endless vista of open clouds, a threatening storm-cloud over a peaceful landscape, or some other single feature. Poetry employs the sublime more freely than pictorial or

plastic art, because while these latter can represent but a single, momentary situation, which becomes painful if really sublime, poetry can narrate a continuous story, and in its progress may follow its touches of sublimity with other and more satisfying emotions.

(4) **Emotions of the Pathetic.** — There is a sentiment that arises as the concomitant of our apprehension of the evanescence and misfortune of beauty and goodness that might very well be called "Æsthetic Sorrow." Its accepted name is **Pathos.** It is this that lends a charm to tragedy. It easily becomes mere "sentimentality," which implies an artificial element.

There is, undoubtedly, a certain æsthetic pleasure in addition to *plot-interest* connected with tragedy as presented on the stage. If the same scenes were to occur in real life, they would, if we were in a normal condition, shock and pain us. Why do they afford us pleasure in a drama? They are, when dramatically represented, connected with scenic and histrionic accessories of great sensuous, and sometimes of great ideal, beauty; they give variety to our feelings, affording decided contrasts, and, hence, much stimulation to our other feelings; and, being mere make-believes, they give us the feeling that even the horrible events of life are, in a sense, mere play and illusion. The drama—and this may be said also in part of the novel—affords an opportunity for the exercise of such natural feelings as Sorrow and Pity, without any real bitterness to us. We shed our tears and exercise our sympathies without any real cost. It is easy to see how a passion for the Pathetic leads to a hollow sentimentalism. Having stirred these deeper emotions by the fictitious without any result in action, we form the habit of not acting when our sympathies are touched by deserving objects. Hence it is that we may weep over the beautiful heroine in the play, whose sufferings and death are known to be a sham, while the realistic beggar at the door of the theatre may die of cold or hunger before morning without our shedding a tear. Artificial excitation which does not lead to action gives to the emotions an artificial character, and this is sentimentality.

7. Ethical Emotions.

Ethical emotions are those which arise in us on account of our relations to Moral Law. In the presence of a law known to be just and right we have, in our normal state, sentiments of **Reverence** for the law, of **Obligation** to obey it, and of **Responsibility** for not having obeyed it. These, when analyzed, are found to be the emotive accompaniments of judgments that it is right to obey the law and wrong to violate it. We may distinguish in addition the following ethical emotions:

(1) **Emotions of Approval.**—There are certain emotions which arise when we contemplate obedience to moral law. When we reflect upon our own obedience, there arise the feelings of **Innocence** and **Self-respect.** When we consider the obedience of others, we entertain toward them sentiments of **Satisfaction** and **Respect.**

(2) **Emotions of Disapproval.**—When we reflect upon our own disobedience to moral law, we experience the emotions of **Guilt** and **Shame.** We know these feelings to be degrading to ourselves and hence, in the normal man, they induce Sorrow, which accompanies a transition from a higher to a lower idea of self-perfection. This, when profound, is **Remorse,** which sometimes leads to **Repentance.** The emotions of Guilt and Shame express themselves by blushes, stammering, and other signs of confusion. The contemplation of moral disobedience in others leads to **Distrust** and **Disrespect.**

The relation of Psychology to Ethics, or the science of right conduct, is a close and important one. A sound Psychology has rendered possible a great advance in the scientific basis and development of Ethics. It is evident that there is no separate faculty

called "Conscience," as was formerly believed and taught.[18] Conscience is only another name for the Moral Consciousness, or consciousness applied to moral subjects. It reveals to us (1) a knowledge of moral distinctions and of the law by which these distinctions of "right" and "wrong" are made; (2) an experience of moral sentiments, such as approval and disapproval; and (3) moral freedom, or voluntary choice between right and wrong courses of conduct. Thus understood, Ethics is seen to be a real science, deriving its facts from the Moral Consciousness. It may be considered as an extension of Psychology in a particular direction, the sphere of right conduct, as Logic is in the direction of pure thought, and as Æsthetics is in the direction of higher sensibility. We have the less need to enlarge upon this branch of Psychology in a general treatise, because it is the exclusive topic of a special study.

8. Religious Emotions.

Religious emotions are those which arise when we think of the Supreme Being, the Author and Preserver of Life, as a Living Person. Some form of religion is regarded by naturalists as universal among the races of man,[19] and no tribe has been discovered incapable of religious education.[20] The ethical emotions are usually blended with the religious, though not invariably. The emotions awakened by the idea of Deity vary widely, according to the intellectual and moral development of races and persons, but the following are characteristic forms of religious feeling:

(1) **The Emotion of Dependence.**—Every human being feels his dependence upon a power outside of and above himself. If he believes in the existence of a Personal Being who is the Creator and Ruler of the world, this feeling prompts him to offer prayers for the divine protection and assistance. Sacrifice also, when it is believed to be acceptable, is offered, in the hope of propitiating favor.

Although the origin of religion is usually referred to other than emotional grounds by those who have attempted to give an account of it, a German theologian, known also as a philosopher, **F. E. D. Schleiermacher** (1768–1834), regarded religion as primarily founded upon the feeling of absolute dependence. This view has been accepted by others and is assumed by them as the starting-point of the philosophy of religion. "The essential germ of the religious life," says J. D. Morell, "is concentrated in the absolute feeling of dependence on infinite power."[21] "The perennial source of religion, opened afresh in every new-born soul," says Newman Smyth, "is the feeling of absolute dependence."[22] Others hold that religion "depends for its existence on the essential nature of reason. . . . Before the religious feeling acquires the distinctness of a notion and urges to conscious action," says D. G. Brinton, "it must assume at least three postulates, and without them it cannot rise into cognition. These are as follows: I. There is Order in things. II. This order is one of Intelligence. III. All Intelligence is one in kind."[23] The universality of the laws of thought (page 162), the intellectual necessity of Absolute and Infinite Being (pages 181, 183) and a First Cause (page 198), and the presence of intelligent design in nature (pages 190, 197), are grounds on which these three postulates are based. The religious emotions are not the cause of religion, but effects in the sphere of feeling resulting from religious ideas. The starting-point of religion is to be found in the tendency of the human mind to explain all phenomena in the terms of personality. This tendency seems to be based on the conviction that mind and personality are manifest everywhere in nature.

(2) **The Emotion of Adoration.**—This is the emotion which prompts us to worship. It arises in the soul upon the contemplation of the power, perfection, benevolence, and holiness of the Deity. It is awakened even by certain glorious aspects of nature, regarded as expressions of personality, which have led to nature-worship. Adoration expresses itself through hymns and ascriptions of praise.

The sun, the sky, the winds, the ocean, the clouds, day, night, time,—all seem to the untutored mind to be personal forces, full of

life and energy, sometimes kindly favoring, and sometimes malignantly marring, the plans of men. Hence, they become objects of worship. They are propitiated by sacrifices, entreated with prayers, honored with shrines and temples (page 125), and the grammatical gender of primitive names gives them the semblance of persons, so that Imagination weaves about them the vestures of poetry and mythology. The play of the Intellect opens a new development of religion. The mind finally employs its power of abstraction. It fixes attention upon some quality or attribute inherent in concrete things, names it, treats it as real, and reasons about it as if it were a living thing (pages 147, 148). This concept is then personified, by that poetic tendency of the Imagination which impels us to treat the creations of thought as if they were living beings; then, finally, drawn by the influence that makes the ideal seem superior to the real, the mind apotheosizes the concept, and a new deity is added to the world's pantheon. The Romans were exceedingly prolific in such deifications, surpassing the Greeks, who adhered more closely to a modified nature-worship. "They had solemn abstractions mysteriously governing every human action. The little child was attended by over forty gods. Vaticanus taught him to cry; Fabulinus, to speak; Edusa, to eat; Potina, to drink; Abeona conducted him out of the house; Interduca guided him on his way; Domiduca led him home; and Adonea led him in. So, also, there were deities controlling health, society, love, anger, and all the passions and virtues of men." To one with a far higher idea of Deity than any of these, a Great Teacher said: "Ye worship ye know not what; we know what we worship. . . . But the hour cometh, and now is, when the true worshippers shall worship the Father in spirit and in truth: for the Father seeketh such to worship him. God is a Spirit: and they that worship him must worship him in spirit and in truth."[24]

9. Relations of Emotion and Knowledge.

While emotion is an accompaniment of ideas and its quality is determined by them, it also reflects a powerful influence on the intellectual processes. Some forms of this influence are as follows:

(1) **Emotion antagonizes present Knowledge.**—As we

have seen (page 26), feeling and knowing are, in a manner, opposed. An emotional state is not favorable to sharp intellectual discrimination. In proportion to the intensity of the emotion, the attention is distracted from mental processes. Sound judgment requires the absence of excitement.

(2) **Emotion stimulates us for future Knowledge.**—Although emotion is unfavorable to knowledge at the time when it is experienced, it affords a stimulus to intellectual activity which is necessary to produce or avoid, according as it is pleasant or unpleasant, a future recurrence of the emotion. The joy of discovery becomes an impulse to investigation; sorrow over failure prompts us to more intense activity. Pride is a powerful incentive to knowledge.

(3) **Emotion affords a bond between forms of past Knowledge.**—This has been already mentioned (page 75). Any intense experience of emotion is likely to be remembered, and serves to recall previous knowledge. The emotion of surprise on perceiving a new or strange object, is frequently so marked as to afford a strong link of association. Herein, in part, lies the power of novelty to fix ideas in the mind. Grief is often so associated with a place where it has been experienced, that images of it are revived whenever the feeling is repeated.

(4) **Emotion furnishes a powerful impulse to Imagination.**—We imagine most when under the influence of excitement. Hope and fear stir the soul to new and unusual combinations of ideas. In a hopeful frame of mind, we imagine everything to be more favorable to us than it really is; in a condition of fear, we imagine everything to be less favorable. The emotional periods of life are the

imaginative periods. The air-castles of the hopeful youth and the romantic dreams of the entranced lover are creations of an Imagination moved by emotion. The æsthetic emotions stir Imagination to activity in pursuit of the ideal.

> "The poet's eye, *in a fine frenzy rolling*,
> Doth glance from heaven to earth, from earth to heaven,
> And, as Imagination bodies forth
> The form of things unknown, the poet's pen
> Turns them to shapes, and gives to airy nothing
> A local habitation and a name."

(5) **Emotion is the principal cause of Interest.**—If objects and ideas produced no feelings of pleasure or pain in us, we should be indifferent to them. The word "**interest**" (from the Latin *inter*, between, and *est*, is) signifies that there is something between the person "interested" and the thing which "interests," which can be expressed in terms of feeling. What produces no feeling in us, directly or indirectly, we treat with indifference.

(6) **Emotion is a source of intellectual Prejudice.**—A learner is likely to regard as useless a study which he finds very difficult. Whatever gratifies us, we readily regard as harmless; and whatever pains us, we naturally consider injurious. We have a tendency to believe that what is beautiful is also innocent. The consistent seems true, even when its reality is not proved, because both consistency and truth produce a feeling of harmony. Inharmonious emotions being often associated with inconsistent ideas, we at last regard our state of feeling as a standard of judgment without examining the facts, and this is the very meaning of prejudice.

Herbart considered pleasure and pain as the results of the interaction of ideas (representations); pleasure being the result of further

ance, pain, of hindrance, in their combinations. If this were true, all harmonious intellectual activity would be pleasurable, all conflicting mental operations, painful; and this, to a certain extent, we find to be the case. We may discover abundant illustrative examples. There is a certain painfulness attending a confused conversation, in which many persons are speaking on various topics at one time. A similar feeling arises from the conflict of assertions with facts, of assertions with one another, or of apparent facts; from questions of personal duty, when opposite courses of conduct seem to be right; from the contradictory wishes, sentiments, and judgments of friends; and from every description of mental confusion.

10. Relation of Emotion to Education.

Emotion, as we have just seen, is obstructive of thinking at the moment when it exists, and yet it may be employed as a motive to mental action. From this point of view, Emotion has an important bearing upon education. Its prominence as a constituent of all psychical life also, and especially of happiness, gives it a place in every well-considered plan of development. We shall confine ourselves here to the following topics: (1) The emotive nature of children, (2) the emotive treatment of the learner, (3) the emotive influence of the environment, (4) the emotive influence of instruction, and (5) the emotive effects of practice.

(1) **The Emotive Nature of Children.**—The first condition of success in teaching is a comprehension of the emotive nature of the learner. In children the emotions have a marked spontaneity, mobility, and intensity. All young children are timid and impressible. Self-regulation is impossible to them, and they surrender themselves to every breath of influence. Without much power of voluntary attention, their whole souls are delivered to the feel-

ings of the moment, and from this cause also they are capable of the most rapid transitions of emotion. They are quick to sympathize with what they understand, but this is very little beyond what they can observe. They have small experience of consequences. Hence, they are plastic to every touch of feeling exhibited by those about them and respond readily to personal moods and to the changes of the environment in which they live.

(2) **The Emotive Treatment of the Learner.**—The emotional mood of the teacher is certain to impress the learner both consciously and unconsciously. The only true master of others is one who is first master of himself. Both sympathy and antipathy combine to affect the emotional influence of a teacher. Sympathy, even when not voluntary, will lead the pupil to reflect the emotional states of the teacher, whatever they are; and antipathy will serve to alienate the learner, not only from the person of the teacher but from all the occupations that he may exact. Thus, a disagreeable teacher may produce in the pupil a positive dislike for study. The worriments incidental to the work of teaching are not infrequently the cause of irritation and unhappiness in the teacher, which are at once reflected by every sensitive pupil in his presence. When authority is made to rest mainly on fear, rather than on hope of approbation and mutual sympathy in labor, not only does antipathy rise between instructor and instructed, but an emotional element is present which is depressing to both mind and body, and friction consumes the energy which should be used for intellectual action. The wise teacher values cheerfulness, not only as a condition of effective work, but on account of its cumulative effect upon happiness and character. There is much

truth in Sydney Smith's saying, "If you make children happy now, you will make them happy twenty years hence, by the memory of it." There is even a deeper truth in the thought that sunshine induces the throwing open of the cloak which the storm prompts us to gather about us for protection; and thus we are enabled to win the spontaneous trust and admiration which welcome our influence to the learner's heart. The more delicately we treat the sensibilities of children, the more refined do they become; the more rudely, the more blunted. A coarse teacher makes a coarse child. It is possible to produce such a condition of sensibility among pupils that a word of disapproval is a sufficient punishment; and it is also possible to produce such a state that loud scolding and perpetual blows are wholly ineffectual in maintaining even the rudiments of order. What proceeds from reason and gentleness inspires reasonableness and love; what proceeds from irritation and physical force provokes irritation and a physical response. Ideas abide and react upon conduct; blows sting for a moment and leave little behind but fear and resentment.

(3) **The Emotive Influence of the Environment.**—For the child, more than for adults, all things have faces and voices. The surroundings very soon impress the opening soul. Next to the teacher's own healthfulness of sentiment, the inanimate objects, the daily companionships, and the social atmosphere which surround the learner affect his emotional nature. In many cases this influence of the environment is the stronger. Not only his egoistic, but also his æsthetic, ethical, and religious emotions take their hue from it. Therefore, beauty should be present in every practicable form and should be interpreted and

impressed upon the mind; the demoralizing example of rude manners and conduct should be excluded at least from the teacher's province; and all contact with impurity should be guarded against. It is difficult to produce refined sensibilities in an environment where the æsthetic and moral standards are low.

(4) **The Emotive Influence of Instruction.**—It is important to estimate justly the value of abstract instruction in its effect upon the emotions. As we have seen (page 253), the mere exhortation to feel does not make us feel. The more of reasoning, the less of emotion. Æsthetic or moral theories do not awaken æsthetic or ethical emotions. Mere precepts do not, therefore, touch the springs of the emotive life. Concrete realities, or ideas representing them, are necessary to elicit feeling. An example of beauty, of justice, of tenderness, of forgiveness, deepens and quickens the corresponding emotion. Therefore, beautiful objects, just actions, tender attentions, forgiving treatment, have a higher emotional value than any doctrines, however sound. A single lovely picture or a well-told story of a good man's deed outweighs much exhortation in producing a cultivated taste or a more sensitive conscience.

(5) **The Emotive Effect of Practice.**—We have seen how emotions are excited by doing that which is expressive of them (page 254). This suggests a truth of great educational value. The secret of emotional training lies in practice. We develop the emotions which we call into exercise. An interest in art is awakened by imitation and production. A few lessons in drawing may do much to open the mind to the discovery and appreciation of beauty. The wrongness of an action is best emphasized,

not when one has performed it, but when he has suffered from it. The victim of a blow, of a falsehood, of a theft, is in a position to feel a strong disapproval of the act. The wise teacher loses no opportunity to deepen the sense of duty through the consciousness of right.

A very full account of the emotional psychology of small children may be found in Bernard Perez' "The First Three Years of Childhood." The chapters on "The Sentiments" and "The Æsthetic Sense in Little Children" contain many curious facts. There is, however, room for the indulgence of an almost irresistible tendency to read theories into the observed facts, many of which, without doubt, admit of two or more explanations. The dangers of inference here are similar to those in the allied realm of interpreting animal feelings. As Max Müller has said: "If there is danger from Menagerie Psychology, there is still greater danger from Nursery Psychology. Nothing is more common among psychologists than to imagine that they can study the earliest processes in the formation of the human mind by watching the awakening mental powers of a child. The illustrations taken from the nursery are not perhaps quite so fanciful as those collected from menageries, but they have often done more mischief, because they sound so much more plausible."[25] A very full discussion of the emotions in relation to education is to be found in Bain's "Education as a Science," Chapter III. The treatment suffers from a bad classification of the feelings, in which emotions, desires, and affections are confused. "That which also warps the theoretical views of Mr. Bain," says Compayré in his "History of Pedagogy," "is that he accords no independence, no individual life, to the mind; and that, for him, back of the facts of consciousness, there come to view, without any intermedium, the cerebral organs."[26] Bain also conceives of moral training as inspired by the penal code. Still, there are many valuable hints to be obtained from this work, especially from the treatment of fear and the evils worked by it. Herbert Spencer's chapter on "Moral Education" in his "Education: Intellectual, Moral, and Physical," has many helpful ideas, but his doctrine of punishment, based on "the penal discipline of nature," leads to practical absurdity. It is simply the rule that punishment should consist

entirely of *consequences!* The "penal discipline of nature" inflicts the gravest consequences for the slightest faults, as where a man slips and breaks his neck. Herbert Spencer's doctrine of punishment would permit boys to fall from high places, to breathe bad air, to poison their blood by the use of tobacco, and *take the consequences*, which he fancies would be more wise and just than the employment of artificial punishments. The instincts of a father on this point are worth a thousand-fold more than the reasoning, in this case thoroughly fallacious, of a philosopher who never had to choose between administering an artificial punishment and seeing his boy break his neck!

In this section, on "Emotion," we have considered:—

1. ***The Nature of Emotion.***
2. ***The Expression of Emotion.***
3. ***The Production of Emotion.***
4. ***Kinds of Emotion.***
5. ***Egoistic Emotions.***
6. ***Æsthetic Emotions.***
7. ***Ethical Emotions.***
8. ***Religious Emotions.***
9. ***Relations of Emotion and Knowledge.***
10. ***Relation of Emotion to Education.***

REFERENCES: (1) Darwin's *Expression of the Emotions in Man and Animals*, pp. 28, 29. (2) James' article on "What is an Emotion?" in *Mind*, April, 1884, p. 188 *et seq.* See also a criticism by Edmund Gurney, in *Mind*, July, 1884, p. 421 *et seq.* (3) *Mind*, April, 1884, pp. 197, 198. (4) Bell's *Anatomy and Philosophy of Expression*, p. 172. (5) Warner's *Physical Expression*, pp. 201, 202. (6) Darwin's *Expression of the Emotions*, pp. 263, 264. (7) *Id.*, p. 310. (8) For a well illustrated distinction between Wit and Humor, see E. P. Whipple's *Literature and Life*, p. 84 *et seq.* (9) Coleridge's *Table Talk*, p. 285. (10) *Id.* (11) Spencer's *Illustrations of Universal Progress*, p. 194. (12) Bain's *The Emotions and the Will*, pp. 247, 248. (13) *Id.*, p. 251. (14) *Spencer's Universal Progress*, p. 256. (15) St. George Mivart's article on "Laughter," in *The*

Forum, July, 1887, p. 495. (16) Spencer's *Universal Progress*, p. 204. (17) For a short account of Æsthetic Theories, see Day's *Science of Æsthetics*, Chapter VII. (18) For detailed reasons for regarding Conscience as not a separate faculty, see Hopkins' *The Law of Love*, pp. 111, 115; and Porter's *Elements of Moral Science*, pp. 244, 245. (19) Quatrefage's *The Human Species*, pp. 482, 483. (20) Mivart's *Lessons from Nature*, pp. 140, 141. (21) Morell's *The Philosophy of Religion*, p. 94. (22) Smyth's *The Religious Feeling*, p. 34. (23) Brinton's *The Religious Sentiment*, p. 89. (24) *The Gospel according to St. John*, iv : 22, 24. (25) Müller's *Science of Thought*, I., p. 22. (26) Compayré's *History of Pedagogy* (Payne's Translation), p. 561.

SECTION II.

DESIRE.

1. Nature of Desire.

Desire (from the Latin *desiderāre*, to miss, to long for) is the sentiment of craving, impelling us to gain possession of that which will afford satisfaction. It is an indication of the self-insufficiency of our nature. Desire may be resolved into three elements : (1) consciousness of want, (2) consequent restlessness, and (3) longing for satisfaction. Desires are to elementary feelings what representative knowledge is to presentative. The consciousness of want results from reproducing in the mind ideas associated with an object that has the power of giving pleasure. If these ideas are not reproduced, desires do not arise. For example, a certain pleasure attends the possession and use of money. The idea of money is associated with its ability to afford pleasure ; hence, on the appearance of

the idea, there arises an accompanying desire to possess and use it. The opposite of Desire is **Aversion** (from the Latin *a,* from, and *vertĕre,* to turn), a feeling of loathing which arises from ideas associated with pain.

The close connection between a representative idea and a desire is evident. We do not desire that of which there is no idea in our minds, although there is in us a general craving for change and for new experiences. But the moment anything is suggested with which pleasure is associated, a desire for it is created, if we are in a condition to enjoy it. The actual perception of such an object also produces a desire. It is, however, through representation that the desire is awakened; for, until the power of an object to give pleasure has been experienced, there is no desire for it. The child cares more for bright pennies than for bank-notes, because the coins afford him a kind of sensuous delight by their form, lustre, and metallic jingle. Later on, when he discovers that a bank-note has many times the purchasing-power of small coin, a desire for the notes is produced. Thus, universally, a desire proceeds from the association of pleasure with an object, and this is effected through the association of ideas. Even when our desires are excited through the persuasion of others, our representative ideas are appealed to as the grounds of the desire. The whole art of persuasion consists in awakening desires through such ideas. One wholly incapable of pleasure from anything would have no desires. He might, however, have aversions, if he were susceptible of pains. If capable of neither pleasure nor pain, he would be indifferent to everything. This condition is illustrated in those who through disease have lost the power of feeling.

2. Kinds of Desire.

A precise distinction of the different kinds of Desire is difficult. The best practical classification is that which groups them in two main classes: (1) those having reference to *self alone,* called **Personal Desires**; and (2) those having reference to self *in relation to other persons,* and called **Social Desires.**

Two antithetical terms have lately come into general use to indicate the opposite ideas of desires centring on self and desires centring on other persons. **Egoism** (from the Latin *Ego*, I) signifies selfishness, and **Altruism** (from the Latin *alter*, another) signifies interest in the welfare of others. In using the terms "personal desires" and "social desires," it is not here intended to denote these opposite ideas marked by the terms "Egoism" and "Altruism." The terms "personal" and "social" are employed to distinguish the desires which arise apart from other persons from those that arise in relation to other persons. Even the desires here called "social" may be egoistic, and the desires here called "personal" may be altruistic. A mother's ambition for her son, or a friend's ambition for a friend, is altruistic. The character of a desire is not changed by the personal reference of it. The same desires may be egoistic or altruistic, according as they are entertained for one's own self, or, through sympathy, in behalf of another person. "Since we can interpret others' experience only by our own, a broad and intense ego-life is the condition of any full and deep social life. It is only in our own consciousness that the meaning and value of life and its experiences can be revealed; and without the knowledge of these there can be no sympathy for others and no understanding of them. Selfishness does not consist in valuing ourselves, but in ignoring the equal claims and rights of others."[1]

3. The Personal Desires.

The forms of Desire having reference to self alone are as follows:

(1) **Desire of continued Existence,** or **Self-preservation.**—The idea of personal destruction is disagreeable to most minds. The wish that one might cease to be, is never entertained, except in abnormal states of mind or body, and may be regarded as an indication of disease or insanity. The desire to live, even in the discomforts of the present life, is almost universal. The desire of immortality is one of the strongest in the soul. The pessimist, who regards life as a burden, is rarely found; and, when

found, the proposition to kill him usually cures him. Normal men are practical optimists; and, though they may believe that life might be more agreeable than they find it, they value it sufficiently to cling to it hopefully, and strive to make it more desirable.

If all men were really **pessimists** (from the Latin *pessimus*, the worst), quite hopeless of good, the human species would soon come to an end by voluntary self-destruction. But pessimism is merely occasional and temporary. It is largely a matter of passing mood. It has been well said that it rests entirely upon the crude fallacy of regarding the evil that is in *one's self* as evil inherent in the nature of the world. It is a malady that rarely affects any but the intensely selfish and conceited. It results from a diseased subjectivism of thought and feeling. This is historically demonstrable from the biographies of pessimists. The certain cure of it is a healthful objective activity and especially a sympathetic exertion to diminish the sufferings of other people. We thereby forget our own and lighten their sorrows, and, in the joy of an approving conscience and the gratitude of those whom we assist, discover a preponderance of happiness over misery.

(2) **Desire of Pleasure,** or **Self-indulgence.**—Man has the power of generalizing his agreeable states into a concept of pleasure, and ends by making pleasure in general an object of desire. Ideas of pleasure differ widely, from that of the mere sensualist who finds his chief good in bodily sensations, to that of the philosopher who finds it in the pursuit of truth and the performance of duty. It is natural to man to seek such objects as give him innocent pleasure, and the desire for pleasure in some form is universal. Man deludes himself, however, in seeking pleasure in the abstract. In this form it does not exist. Therefore, by making pleasure an object of pursuit one never realizes it.

A wise and experienced American teacher, **Francis Wayland** (1796–1865), has said: "Our desire for a particular object, and the existence of the object adapted to this desire, is in itself a *reason* why we should enjoy that object, in the same manner as our aversion to another object is a reason why we should avoid it. There may sometimes be, it is true, other reasons to the contrary, more authoritative than that emanating from this desire or aversion, and these may and ought to control it; but this does not show that this desire is not a reason, and a sufficient one, if no better reason can be shown to the contrary. . . . We find by experience that a desire or appetite may be so gratified as forever afterwards to destroy its power of producing happiness. Thus, a certain kind of food is pleasant to me; this is a reason why I should partake of it. But I may eat of it to excess, so as to loathe it forever afterwards, and thus annihilate in my constitution this power of gratification. . . . Again, every man is created with various and dissimilar forms of desire, correspondent to the different external objects designed to promote his happiness. Now, it is found that one form of desire may be gratified in such manner as to destroy the power of receiving happiness from another; or, on the contrary, the first may be so gratified as to leave the other powers of receiving happiness unimpaired. . . . Hence, while it is the *truth* that human happiness consists in the gratification of our desires, it is not the *whole* truth. It consists in the gratification of our desires *within the limits assigned to them by our Creator.*"[2]

(3) **Desire of Knowledge,** or **Curiosity.**—This is a powerful desire, but varies in both form and intensity. In some individuals it is dominant, leading to the sacrifice of most other objects, as in the case of those investigators who are animated by a strong desire for truth in its scientific forms. In some it degenerates into a low inquisitiveness that is without interest in eternal truth, but finds satisfaction in the excitement and novelty of the most trivial gossip.

Curiosity is the first spur of childhood in the pursuit of knowledge, and it is also the impulse that impels the philosopher to forego all other pleasures for the sake of discovering truth. It assumes, how-

ever, great modification with the unfolding of the mind. In the child, doubtless, the pleasure of a novel sensation is a large element in curiosity. The tendency to investigate is manifested so early, however, that it seems an instinct in young children to obtain and open and examine every new thing. The same disposition is manifested in apes and monkeys, but it ends with small results. In man this instinct combines with a rational nature, and he finds a satisfaction in the discovery of truth as such. This is the trait of scientific curiosity. But even this is intimately blended with other desires. The love of adventure, a desire for variety of experience, the expectation of fame, even the hope of pecuniary rewards, all combine with the pure and unselfish desire for truth in actuating men to undertake laborious investigations. All this is shown in the boasting of explorers, the vacillation of discoverers, the jealousy of writers, the litigation of inventors, and the controversial spirit that so often spoils scientific work. The consentient judgment of men awards high appreciation to a sincere devotion to truth for its own sake in which even this appreciation has not been a controlling motive.

(4) **Desire of Property,** or **Acquisitiveness,** is a prominent desire in men. There is a keen satisfaction in exclusive proprietorship. Property, especially in the form of money, which is a kind of generalized form of wealth, is in a sense a generic good, inasmuch as there are few kinds of pleasure which it cannot obtain. Hence, men make great sacrifices in the acquisition of it, sometimes degrading themselves to obtain it, and sometimes only to find that in the process of acquisition they have destroyed the capacities of enjoyment.

In the miser, acquisitiveness degenerates into **avarice.** The miser is a psychological anomaly, and yet not difficult to explain. He begins with the idea of pleasure as an accompaniment of the use of money. He experiences a pleasure in mere possession which, as affording the continual *possibility* of pleasure, at last comes to be the dominant pleasure itself. Every new augmentation of wealth in-

creases this pleasure, but not in the same proportion, *up to a certain point, but there it ceases.* According to a psycho-physical law, a progressively greater increment of excitation is required to increase in the same degree the amount of feeling. As a man with a single dollar feels more pleasure in adding to his possessions another dollar than a man worth a million does, so, universally, a greater and greater increment of gain is required with the increase of wealth to render one happy. Attending now mainly to the *growth* of his fortune, rather than to the *amount* or *use* of it, the miser actually feels poorer as he becomes richer! Thus his happiness is turned into misery, and his very name denotes his wretchedness. For this there is but one cure, the normal use of wealth as a means for its natural end,—the increase of life and happiness.

(5) **Desire of Power,** or **Ambition.**—There is a certain satisfaction found in the possession of power, that leads men to desire it. Position, or place, sometimes affords men an opportunity to acquire and exercise power, and, for this reason, becomes an object of desire. The word "Ambition" is from the Latin *ambitio,* a going around, especially of candidates for office in Rome, to solicit votes; hence it has come to signify a desire for office or honor.

4. The Social Desires.

The principal desires arising through our relation to other persons are:

(1) **Desire of Companionship,** or **Sociability.**—Man is a social being. In truth, it is because of his existence in society that he is man. The individual, left to himself, in infancy, would perish; in mature life, would degenerate. Most of the comforts of life and all of its refinements are afforded by the social state. The instrument of thought, language, is a social product. The faculties are stimulated and directed by contact with other minds.

Society is the sphere in which the affections have their origin. The hermit soon reverts to an animal plane of life. Hence, in all normal minds, there is a strong desire for the social medium, which is to the mind what air and food are to the body.

"Man is naturally selfish, and naturally social and sympathetic. There is provision in our nature both for selfishness and for society and mutual help. The whim that the natural state of man is the war of all against all was the conclusion of a theory rather than the expression of experience. Man seeks man and delights in man far more than man wars upon man. This primal man who reasoned himself into society is a near relative of the men who emerged from inhuman isolation and made the social contract which figured so largely in the political philosophy of the last century. The real function of the various considerations of interest and mutual advantage which are appealed to, has not been to develop the social sentiments, but to extend their application beyond narrow family or tribal limits."[3]

(2) **Desire of Imitation,** or **Imitativeness.**—Man is an imitative being, finding great satisfaction in doing what others do. This desire is always manifested in children, and is an important factor of their education. The power of public opinion, custom, and fashion, is an evidence of the prevalence of this desire among men.

The tendency to imitate is deeply ingrained in human nature. It has a physiological foundation. There is an organic sympathy in the different parts of the nervous system, so that when one part is affected all are indirectly influenced. This extends beyond the organism. The sight of a ghastly wound is painful. Ideas react upon the organism. This is particularly true of the imitation of motions. The smile or yawn of another tends to excite imitation in us. Children respond to the sounds made by animals, and mimic the cries of cats, dogs, and sheep. This is the basis on which articulate language is first acquired. The child imitates the sounds of

others about it and learns the kind of language that is spoken in its presence. We all try to imitate those whom we consider superior. The superficial peculiarities and accidental traits of great orators and writers are more easily acquired than their native intellectual or emotional power, and it is the former which the young admirer is most likely to reproduce. The power of fashion depends largely upon the desire to appear like those who occupy an exalted position in our eyes. The most absurd extravagances appear even beautiful when associated with wealth, or beauty, or supposed culture. Underlying this, there is a plausible philosophy. We think that people who can do what they will, would not do this particular thing if it were not the best. Therefore, we do as others do.

(3) **Desire of Esteem,** or **Approbativeness.**—Men are largely influenced by the opinions of others concerning them. The respect of our fellows is a natural object of desire, and results in the development of some of the noblest elements in human character. The consentient opinions of the wise and good form a valuable criterion of conduct. We easily make the mistake of regarding also the opinions of the foolish and vicious. As mere opinion does not contain a rule of judgment, we must seek it elsewhere. The sacrifices men make for the sake of a good reputation show that it is considered one of the dearest of earthly possessions.

Perhaps there is no stronger desire in men than **the desire of fame.** It is not a desire of territory but of glory that stimulates the soldier to endure the hardships and face the dangers of war. Man is the only earthly being capable of the desire of posthumous fame, or glory after death. It seems impossible to account for this widespread and intense human desire except upon the supposition that men instinctively believe in their own immortal existence. Like all the other desires, the desire for esteem easily assumes abnormal forms, and perhaps the most ridiculous of these is the desire of notoriety, apart from the estimate put upon it in the public conscious-

ness. But mere notoriety serves so many purposes, some of them purely sordid, that the desire for it is not difficult to understand.

(4) **Desire of Superiority,** or **Emulation.**—This is closely allied to Ambition, but differs from it in being a desire for relative rather than absolute attainment. It is a powerful motive to action, urging on the naturally indolent, but also over-stimulating the industrious. It is often attended with great excitement, and so becomes one of the most dangerous principles in our nature.

5. Desire and Will.

Desire arises spontaneously in consciousness when ideas associated with pleasure are presented. It is an involuntary accompaniment of mental activity. And yet the desires are indirectly under the control of the Will. It is upon this assumption alone that desires can have any relation to morality. Such a relation they certainly have, for we distinguish between what ought and what ought not to be desired. We control our desires only by a voluntary withdrawal of the attention from those ideas which excite them and by refusing to grant them indulgence when excited.

6. Desire and Education.

Desire has even a closer relation to education than Emotion, for the desires constitute the principal incentives to action. As in the case of the appetites, so in that of the emotions, there is a perpetual battle between self-indulgence in present pleasures, on the one hand, and such desires as those of knowledge, power, esteem, and superiority, on the other. The growth of the desires soon results in

the formation of one of two types of character,—the self-satisfied or the ambitious. The first needs to be stimulated along the path of activity, the second often requires to be repressed. The great disadvantage of all competitive methods is, that the dull and unaspiring minds are not reached by them, while the ambitious, who often need repression more than stimulation, are spurred on to unhealthful activity and a still more unhealthful feeling either of envy and hatred, if they are unsuccessful, or of pride and contempt for others, if they are successful. We shall limit our discussion to (1) the educational use of the desires, and (2) the regulation of the desires.

(1) **The Educational Use of the Desires.**—The whole process of education assumes the existence of certain native impulses which respond to stimulation. The native curiosity of a child affords the teacher some hope of being able to attract his attention and engage his interest. Every wise teacher begins a new subject by establishing a relation between the child's native curiosity and the facts and principles to be disclosed, unless it can be already assumed to exist. The chief difficulty is not in obtaining, but in holding, the attention; for a thousand irrelevant desires come into conflict with the child's interest in what is presented. Here other desires must be utilized, such as desire of imitation, approbation, and emulation. The aversions, or negative desires, have their place also; as the aversion to pain in every form, to the inability to do as others do, to disapprobation, and to the sense of inferiority. In the use of desires and aversions there is wide scope for the teacher's personal ingenuity and tact; for, owing to the great variation of temperaments, no uniform method is universally good.

(2) **The Regulation of the Desires.**—Like the appetites, the desires must be governed and made to conform to reason. Their regulation cannot be accomplished by their destruction ; for this is next to impossible, and in the case of the natural desires, would result in a serious mutilation of the nature ; but they may be made to balance one another, and so produce an equilibrium of character. It is this harmonious balance of desires that constitutes the ideal man. The total eradication of the desires, even of those we call "selfish," would result in a serious injury. Not to desire existence, pleasure, knowledge, property, or power,—would be to become pessimistic, ascetic, ignorant, improvident and servile. Not to desire society, conformity to others, approval, or superiority,—would be to become isolated, eccentric, despicable and inferior. True Altruism is not found in destroying our natural desires, and true Egoism does not consist in the gratification of them. The highest humanity is reached when the desires are moderated and transfused with reason, and when the equal claims of others to the same reasonable gratification of their desires also is unselfishly recognized.

The relative values of private and class instruction, the proper mode of stimulating ambition and of employing emulation, and the utility of various systems of marking the work of learners, are closely associated with the psychology of the desires. Private instruction has the advantage of affording more opportunity for personal acquaintance with the student and specific comprehension of his needs; while class instruction has the advantages that come from greater enthusiasm, the imitation by the backward of those in advance, of competition among the pupils for preëminence and for the teacher's approval. The danger of emulation has been already pointed out. Some of its impulses may be obtained without its intense *personal* effects by matching one *class* with another and not

allowing *individual* superiority to count. This method creates a strong desire for distinction, which is, nevertheless, largely sympathetic and altruistic, as it is shared by all. It is difficult to see any objection to fixing a standard to which all must attain, in order to be passed to higher study. Although there are intrinsic difficulties in representing this standard by a fixed number, there seems to be no valid objection to a teacher's employing such a sign, for he must in some way fix this standard in his mind. The keeping of a daily record is far more likely to secure justice than a single mark dependent upon the contingencies of a single examination. The main objection to a "**marking-system**" seems to be to its relative discriminations, not to its absolute nature. The motive of the learner, all will admit, should be to acquire knowledge, not to secure a high mark; but any objection that lies against marking the student's attainments might equally well lie against the teacher's mere announcement that the student is promoted. The mark and the announcement mean the same,—that the student may go on with higher work. It is the odious *comparison* involved in published grades that produces evil effects.

In this section, on "Desire," we have considered:

1. ***The Nature of Desire.***
2. ***Kinds of Desire.***
3. ***The Personal Desires.***
4. ***The Social Desires.***
5. ***Desire and Will.***
6. ***Desire and Education.***

References : (1) Bowne's *Introduction to Psychological Theory*, p. 195. (2) Wayland's *Moral Science*, pp. 101, 103. (3) Bowne's *Introduction*, p. 196.

SECTION III.

AFFECTION.

1. Nature of Affection.

Affection (from the Latin *ad*, to, and *facĕre*, to make) is a form of sentiment implying a making toward, or going out to, an object. Like Desire, it has an object outside of self; but, unlike Desire, it reveals a fullness, not an emptiness, of our nature. It may be resolved into (1) a consciousness of benevolent or malevolent feeling, (2) generated by the idea of a definite object, (3) toward which the feeling is directed. For example, take a mother's Affection for her child. It is not simply an Emotion, for it has a definite external object. It is not simply a Desire, though it may be blended with desires, for it is not so much a craving for the child as it is a fullness of feeling going out toward the child. Its distinguishing characteristic is that it is a particular sentiment directed toward a definite object.

All deep and abiding affection is of slow growth. It resembles the process of generalization in the formation of a concept. It results from a repeated experience of one kind of feeling caused by a particular person or thing. The child's love for its mother well illustrates this. At first it cannot be presumed to have any preference for its mother over other persons who are kind to it; but, gradually, memories of pleasurable experience cluster around the mother, whose constant ministries are ever augmenting and reviving associations of satisfaction. The loving care, the tender sympathy, the watchful protection, the kindly counsel, the sheltering and soothing presence, combine their effects upon the Sensibility in an aggregate

of delightful recollections from which the chidings and pains of punishment are obliterated, and the result is Love. It grows with the years as an appreciation of her skill, and wisdom, and virtue, and self-sacrifice, becomes better defined to the unfolding Intellect. In a similar way the love of places grows. The pleasures of childhood are all associated with the place and scenes of home. Here the first lessons in Sense-perception are taken, here language is first acquired, here the first emotions of all kinds are experienced with the freshness of novelty in them, here too the personal affections are formed amid memories of father and mother, brother and sister. And so it results that, however humble, home elicits the affections of childhood, and the last, as they are the first, of all the sentiments of the heart, held sacred in all our contacts with the world, are the love of mother and the love of home.

2. The Classification of Affections.

We may classify Affections in three ways:

(1) According to their **Objects.**—Regarding their *objects*, we may say that Affections are (*a*) **General,** when entertained toward men universally, as *Philanthropy*, or love of man, and *Misanthropy*, or hatred of man; (*b*) **Corporative,** when entertained toward particular groups, as *Patriotism*, or love of country, and *Esprit de Corps*, or party-spirit; (*c*) **Domestic,** when entertained toward members of one's own family, as *Conjugal, Parental, Filial,* and *Fraternal Love;* (*d*) **Elective,** when entertained according to some particular personal ground of attachment, as *Friendship, Love of Home*, etc.; or (*e*) **Religious,** when entertained toward the Deity, as *Piety*, or devotion to God.

(2) According to their **Quality.**—It is evident that Affections have *qualities*, a tendency to benefit or injure their objects. We have, therefore, according to this principle of division, two classes of Affections: (1) the

Benevolent, or those of well-wishing; and (2) the **Malevolent,** or those of ill-wishing.

(3) According to their **Modes of Origin.**—Some Affections originate without any other cause than an inherent tendency in our natures to entertain them. A mother's love for her child is of this kind. It does not depend so much upon the character of the child as upon the nature of the mother. Other Affections originate from some consideration offered by the Intellect as a reason for its existence. An affection for a worthy cause is of this kind. As to their origin, then, we have two kinds of Affection: (1) **Natural,** and (2) **Rational** Affections.

3. The Voluntary Element in Affection.

While the Natural Affections have much of the spontaneous character of Emotions and Desires, there is in all Affection a voluntary element. Wishing well or wishing ill enters into the very nature of Affection. The Affections, therefore, are esteemed the best tests of personal character and of personal relation. As universal Benevolence is required and every form of Malevolence is censured by the highest morality, the Affections are taken as the evidences of the virtuous or vicious elements in character. Affection naturally leads up to the examination of Will, for it is, preëminently, feeling directed by Will. We speak of "placing" the Affections upon one or another object, but not of "placing" the Emotions. Hence, the objects of Love are viewed as "chosen."

After stating that in mere emotion there is excitement without choice, **McCosh** says: "Affection does not deserve the name of love which mounts no higher than mere feeling. In all genuine love

there is well-wishing, there is benevolence. We wish well, what we believe to be good, toward the person beloved. In love, we would do good to our neighbor, we would promote the glory of God. To bring out this, we may distinguish between love considered as mere attachment, which we may call the love of complacency, and love considered as well-wishing, that is, benevolence. The former is mere emotion, which may or may not be virtuous. The latter is an act of our voluntary nature, and is a virtue, is the very highest virtue,—'the greatest of these is charity.'"[1]

4. The Principal Types of Affection.

It is impossible to enumerate and distinguish all the Affections of the human soul. We can accomplish every important psychological purpose, however, by considering the leading types. These are best described antithetically, by contrasting each benevolent with its opposite malevolent form. We shall, accordingly, mention the following opposites: (1) Love and Hate, (2) Gratitude and Ingratitude, (3) Trust and Suspicion, (4) Pity and Contempt.

(1) **Love and Hate.**—These are, respectively, the generic forms of benevolent and malevolent Affection. **Love** seeks to benefit, and **Hate** seeks to injure its object. Both words, however, are used with great latitude of meaning. Sometimes Love hardly exceeds admiration and approval, and Hate sometimes implies only dislike and disapprobation. Love ranges through the wide scale of kindly feelings toward well-disposed and faithful domestic animals, the innumerable shades of personal feelings,—friendly, fraternal, parental, filial and conjugal,—up to the devotion of the whole soul to the will and service of the Creator. Hate assumes also a great variety of forms from passing **Anger,** which is more than an emotion because it reacts on an object, to **Revenge,** which is a deliberate determination

to injure in retaliation for an injury received. It also embraces such special forms as **Envy,** which is hatred of another because of his success and good fortune, and **Jealousy,** which is a feeling of hatred felt toward another person because of his supposed success in withdrawing from ourselves an affection which we have possessed or desired. All Hate incites to injury, but in most natures it is brought within the influence of counteracting motives, and the element of actual injury may be softened into ill-will. In the noblest natures it is reduced to mere **Indignation,** which is a strong feeling of the unworthiness of an injurious act and of the person who has performed it.

It is natural for men to love their friends and hate their enemies. The Christian summary of moral law enforces the obligation of universal love. It presents herein an ideal confessedly too high for ordinary human nature to accept and regard without a great moral elevation. It implies a recognition of personality and brotherhood in all men and a willingness to carry out this recognition in all the details of life. It implies an identification of one's self with humanity. This is difficult for man, as a mere sentient organism. The mere animal cannot identify himself with his species. As an animal he is simply an individual. But man, as a being of intelligence and moral nature, is not merely an individual. He becomes man only in society. Love appears first in the family, then in the tribe, then in the nation, only at last in the whole world. Even conjugal affection plays but a small part in the most ancient literature. Woman is represented as the servant and solace only of man, not as his companion. Even among the Romans down to the Christian era, the child who was feeble or deformed was exposed to death by his father. It is an historic certainty that a new idea of man began to prevail wherever Christianity was introduced. Women and children have been recognized as having rights which arise from personality. Only persons have rights. Love seeks the well-being of its objects. A wider love of men has established the rights of men. Human

well-being is attained only when each one has his rights. Love, therefore, is realized only in the light of law, which is the definition of rights. It is for this reason that Christ sums up the law as consisting finally in love, which is the "fulfilling of the law."

(2) **Gratitude and Ingratitude.**—**Gratitude,** or thankfulness, is a feeling of reciprocity, or disposition to make return, in good will at least, for kindness shown by another. The sentiment may exist without the ability or the opportunity to render service in return, but is wanting where there is no disposition to reciprocate when the occasion does present itself. Even the nobler animals are capable of it, which makes it the more remarkable that it should be so often lacking in man. Its opposite, **Ingratitude,** is usually detested as a form of meanness indicating the utmost poverty of soul.

A wit has defined Gratitude as "a lively sense of benefits to come," implying that it is simply an egoistic tact. Whatever evidence of this a careful study of human actions may afford, the sentiment of gratitude as experienced by those capable of it is very different from gracious expectancy of benefit. It is not so noble as love, because it rests on a reason, a benefit received, which derives its force from our own increased happiness. Because it is not so noble, it is more to be expected and more missed when it is due and not rendered. It is this that makes ingratitude seem base where the lack of love would seem endurable. The bitterness of unrequited love is largely owing to the feeling that where much has been bestowed something is to be expected. The justness of this sentiment of love blended with a supposed claim for requital depends upon what has been accepted. If we lavish upon others what they do not wish, it is not just to call them ungrateful. The whole responsibility for the exercise of affection rests upon our freedom to choose its objects.

(3) **Trust and Suspicion.**—As a concomitant of the judgment that a person possesses a true character, there

arises a feeling of confidence in his conduct and purity of motive. This leads to a going forth of the soul to repose in the integrity of another and is called **Trust.** This Affection can exist only when the proper causes of it are believed to be present, and cannot be felt toward one whose conduct and disposition do not warrant it. The opposite of Trust is **Suspicion.** It is often a source of great injustice, inasmuch as the interpretation of motives, on which it is often based, is a difficult and uncertain sphere of inference.

The word "**Faith**" involves this sentiment of trust as well as mere belief, which is an intellectual act (page 155). It is the voluntary element in faith that gives it a moral character, and this not in the act of trusting as such, but in honoring that which ought to be trusted. Faith thus becomes a duty and suspicion becomes a vice. We ought to trust that which is trustworthy. In the relations of husband and wife, parent and child, brother and brother, friend and friend, trust deserves to be awarded in proportion to proved fidelity. It is because of this that we speak of "low" and "base" and "mean" suspicions, implying an unworthiness in the one who, without grounds, suspects. Our faith in nature and in the evidence of our senses and the operations of our faculties rests upon the trust, as it has been well expressed, "that the Author of our being will not put us to permanent intellectual confusion." Faith in God is a moral obligation resting on the trustworthiness of the Creator, whom we dishonor when we do not trust Him. How far we may be held to trust the representations of others with regard to all matters, depends upon the trustworthiness which they exhibit in those affairs of which we have some knowledge and of which we can, therefore, judge.

(4) **Pity and Contempt.**—The community of nature between man and man creates a fellowship of feeling between men. When a misfortune happens to one, it produces in all a feeling of sympathy, unless there is some strong counteracting sentiment. This going forth of sympathy toward another, with a disposition to alleviate his distress,

is **Pity.** It implies a perception of worth, either actual or possible, in its object. We may be pained through our sympathies when others endure deserved sufferings, but we do not really pity them, unless we have the disposition to help them. An opposite sentiment is entertained toward those whose actions are below the dignity of human nature. This is **Contempt.** We may entertain it for persons as well as for their acts, but the perception of higher possibilities even in contemptible persons often evokes Pity for them while we have Contempt for their deeds and characters.

The same object excites our pity or our contempt according to our judgment of its worthiness. An intoxicated man, who has become inebriated through the deception and malicious purpose of others, excites our pity. One who has deliberately surrendered his reason and his will to the filth of the gutter, excites our contempt. In so far as one is a victim or a dupe, we pity him; in so far as one is the conscious and purposive cause of his misfortune, we have contempt for him. It was the thought that society itself was in some way responsible for the crimes and degradation of men, and that under each marred and disfigured human shape stirred a soul with a spark of divinity within it, that inspired John Howard to attempt his philanthropic mission of prison-reform. Pity is benevolence in the presence of distress that is undeserved. Self-righteousness, thinking that no misfortune is undeserved, contemptuously "passes by on the other side." Humanity, knowing its own weakness, has compassion on suffering, and bends over the victim of misfortune with a tender ministry of oil and wine, sets the fallen brother on its own beast, and provides shelter and protection. The soul is larger than every law but the law of love, and that is a shallow Psychology which does not measure its greatest magnitude.

5. The Polarity of Affection.

The Affections, as we have seen, are polar. Benevolence and Malevolence are opposite and contradictory.

No one can love and hate the same object at the same time. Affection has no equatorial region. There are many degrees of Affection, and personal temperaments differ in energy; but, generically, there are but two kinds. Love repelled can lead only to Hate. Hate destroyed can lead only to Love. We may be *without* Affection for certain objects; but, if we have it, it is of one of the two opposite types. A personal interest once aroused does not perish quickly; but it may change its character, and that change is from one pole to its opposite.

Congreve's lines,—

> "Heaven has no rage like love to hatred turned,
> Nor hell a fury like a woman scorned,"—

are too strong for a scientific formula, but they serve to show the manner in which the poet conceived the logic of feeling in its quick transition from one form to another. All literature and all life illustrate the fundamental truth that is here expressed. Love may linger over its object long after that object has proved unworthy, but the very memory of a really dead love is hateful to the lover.

6. Affection and Education.

The Affections have important relations to education (1) as affording a basis of inspiration and influence, and (2) as admitting of direction and training.

(1) **Inspiration and Influence of Affections.**—To inspire and influence a child, is to create love in his heart. It cannot be forced under compulsion, it must be lovingly elicited. The love of a person may lead to the love of a study. Hence, the value of personal affection for the teacher, but the true teacher strives to awaken love for the pursuit itself. Without diligence, there can be no progress, but *diligence* (from the Latin *diligĕre*, to prefer) implies a preference.

(2) **Direction and Training of the Affections.**—Guidance in the exercise of the affections implies a preconceived ideal of human nature, to which the affections should be conformed. Assuming that benevolence rather than malevolence of character is the ideal to be attained, let us confine ourselves to the methods of training. These are **Repression** and **Elicitation.** As no affection is created by mere force, so it cannot be destroyed by force. The confession of it may be silenced, but the sentiment remains. Repression, then, should not be direct. An affection is changed by keeping out of consciousness the qualities which have produced it and by bringing into consciousness other qualities. Dislike for a person is removed by keeping out of mind the qualities that have provoked dislike and by fixing the attention upon excellences. The same principles apply to a study. Dislike for it is removed and love for it is elicited by presenting it in such a light as to make it really attractive.

The brilliant German writer, **Jean Paul Richter** (1763–1825) has given some suggestive hints upon the education of the affections. He says: "The child begins with selfishness which affects us as little as that of animals; because the soul, darkly hidden under its various wants, cannot yet feel its way to another, but incorporates others, so to speak, with itself. In so far as the child finds nothing lifeless without, any more than within itself; it spreads its soul as a universal soul over everything. . . . Love in the child, as in the animal, exists as an instinct; and this central fire frequently, but not always, breaks through its outer crust in the form of compassion. A child is often indifferent, not merely to the sufferings of animals and to those of persons unconnected with himself (except when the cry of pain finds an echo in his own heart), but even to those of relatives. Innocent children will frequently find pleasure in standing on the place where another is to be punished. A second observation, founded on experience, is, that boys, when approaching near to

manhood, show the least [benevolent] affection, the most love of teasing, the greatest destructiveness, the most selfishness and cold-heartedness; just as the coldness of the night increases twofold shortly before the rising of the sun. But the sun comes and warms the world; the superabundance of power becomes love; the strong stem encloses and protects the pith; the teasing lad becomes the affectionate young man. The other observation of childish heartlessness, recorded above, vanishes in the very opposite quality of tenderness, so soon as the visible pain of the culprit, by its increase, affects the child; every fresh wound makes a tearful eye. Consequently, there is not so much need to ingraft the buds of affection, as to remove the moss and briars of selfishness which hide them from the sun. . . . Wherever a pulse beats, a heart reposes in the background; if there be but some little impulse toward love, the whole essence of love lies behind it. But you plant the selfish weed, instead of eradicating it, if in the presence of children, you pass contemptuous, though just judgments, on your neighbors, or even your town. How else can the child learn to love the world than by learning to love what is daily around him? And can we love what we despise? . . . If a large town have the injurious effect on children's hearts of compelling them to assume the neutrality of great people, because so many of whom they are ignorant, and to whom they are indifferent, constantly pass before them, much more must a village harm them if they hate and despise as many people as they know, that is to say, everybody."[2]

In this section, on "Affection," we have considered:—

1. ***The Nature of Affection.***
2. ***The Classification of Affections.***
3. ***The Voluntary Element in Affection.***
4. ***The Principal Types of Affection.***
5. ***The Polarity of Affection.***
6. ***Affection and Education.***

References: (1) McCosh's *The Emotions*, pp. 217, 218. (2) Richter's *Levana; or, the Doctrine of Education*, pp. 339, 341.

SECTION IV.

THE DEVELOPMENT OF SENSIBILITY.

1. Summary of Results.

In our examination of the different ways in which Sensibility is affected, we have discovered many kinds of feeling which we have undertaken to classify. We must not, however, lose sight of **the unity that underlies this wide diversity of sensitive experience.** While Sensibility is differently affected by various objects and ideas, it is not in any sense a product of these. It is a faculty of the soul inherent in its primary constitution, without which feeling of any kind would be impossible. We may summarize the feelings as follows:

- **Sensibility affords:**
  - I. Sensations, in the form of
    - 1. Simple Sentience, which is
      - (1) Muscular,
      - (2) Organic, or
      - (3) Special;
    - 2. Appetite, which is
      - (1) Natural,
      - (2) Acquired, or
      - (3) Inherited.
  - II. Sentiments, in the form of
    - 1. Emotion, which is
      - (1) Egoistic,
      - (2) Æsthetic,
      - (3) Ethical, or
      - (4) Religious;
    - 2. Desire, which is
      - (1) Personal, or
      - (2) Social;
    - 3. Affection, which is
      - (1) Benevolent, or
      - (2) Malevolent.

2. The Stages of Feeling.

The kinds of feeling enumerated in the preceding scheme appear in an order of succession and the higher forms are conditioned upon the lower. The sensations, or physical feelings, are experienced first in the order of time; those of simple sentience being the earliest, and the most rudimentary of the natural appetites soon appearing. The sentiments, or psychical feelings, are not possible until the Intellect has a stock of ideas of which these higher forms of feeling are accompaniments. As soon as ideas and judgments are formed, emotions are experienced as the concomitants of these. When feelings are connected ideally with certain objects which produce them, desires are awakened. When feelings of benevolence or malevolence are directed toward objects or persons, affections arise. Sensibility reaches these successive stages of feeling as the range of psychical experience is extended.

3. The Development of Sensibility.

The power to feel is evidently capable of development as new conditions for its exercise are afforded. As in the case of Intellect, however, it cannot be shown that Sensibility is gradually evolved from something else. It appears in the simplest form of sensation, not as a result of external causes, but as a peculiar power in the sensitive subject. The Sensational School of psychologists has attempted to derive all the higher forms of feeling from simple sensations.[1] The futility of this attempt is evident to any one who has carefully followed the analysis of the

feelings. A sentiment is not a transformed sensation, but a new form of feeling attending a new experience.

4. Habitual Feeling.

The repeated experience of feelings of the same kind produces habits of feeling. When these become fixed, they form **dispositions** of Sensibility, tendencies to repeat more readily the actions which produce the feelings that have become habitual. One who has formed the habit of experiencing joyful or sorrowful, hopeful or apprehensive, emotions, finally acquires a joyful or sorrowful, a hopeful or timid, disposition. Such dispositions crave exercise, and hence are sometimes called **propensities,** or inclinations to feel and act in certain particular ways. The aggregate of these propensities constitutes what we mean by the word **character.**

"**Cœnæsthesia**, or, as it is otherwise called, common feeling, seems to arise from the summation and cumulation of all the sensations of all the sensitive parts of the body. Any one, taken by itself, is very minute, and might be imperceptible. Taken together, they constitute the sense of life, of vitality, and of general *bien aise*, or *malaise*. They seem also to make up the underlying emotional temperament of the individual as distinct from his varying moods and dispositions. They also serve as the sensuous basis, which, when interpreted, goes to determine the feeling which each has of his own individuality. Any sudden or abnormal alteration of it is quite likely to result in some disorder of individuality, as seen in insane persons, who imagine themselves to be Job, Queen Victoria, Julius Cæsar, etc. These feelings, constituting the report in consciousness of one's body, as a whole, are certainly intimately connected with self. They are constant, continuous, and relatively permanent. They form the background on which other feelings display themselves. It is not strange that their disorder should be accompanied with results otherwise startling."[2] The doctrine of "tempera-

ments" is somewhat fully discussed by Ladd, 'Physiological Psychology," pp. 574, 579; and Lotze, "Microcosmus," II., pp. 24 *et seq.*

5. Habitual Expression.

We have seen that every emotion has its characteristic mode of outward expression. Habitual feelings produce habitual expressions. The face and figure reveal the dominant feelings of the soul, and thus become indexes of the inner life. There is, therefore, a foundation for a science and an art of **physiognomy,** or of judging the character of a person by his facial expression. The modifying causes of expression are so numerous and complex, however, that there is wide opportunity for erroneous judgment in the interpretation of the character through the expression.

In stating that a science and an art of physiognomy are possible, it is not intended to imply that either a true science or a trustworthy art has yet been attained. The plausibility of such a science has conduced to the success of the most superficial and unscientific charlatans in deceiving people who have been willing to pay for such valuable knowledge as the science of reading character at sight would be if one could only really possess it. The Swiss writer, **Lavater** (1741–1801), who wrote extensively upon the subject, possessed keen powers of observation, much learning, and considerable insight into character. His theories, however, contain much that is purely fanciful, and of this he himself seemed to be aware before the close of his life. The practical difficulty in judging of character by the outward expression is, that the same effects are produced by many different causes, and, as all such judgment depends upon the inference of the cause from the effect, we are constantly liable to go astray by assigning the wrong cause to a given facial expression.

6. The Inheritance of Feelings.

That certain prevailing feelings, or, more precisely, tendencies to experience certain particular feelings, are

inherited, is beyond all doubt. We have already seen evidence of the inheritance of certain appetites (page 245). Still, from the great complexity of the feelings, the proofs of heredity are not so clear as they are in the case of Intellect. Sentiments, and especially emotional temperaments, are certainly capable of transmission from generation to generation.

Maudsley testifies as follows to the distinct inheritance of avarice: "In several instances in which the father has toiled upwards from poverty to vast wealth, with the aim and hope of founding a family, I have witnessed the results in a mental and physical degeneracy, which has sometimes gone as far as the extinction of the family in the third or fourth generation. When the evil is not so extreme as madness or ruinous vice, the savor of a mother's influence having been present, it may still be manifest in an instinctive cunning and duplicity, and an extreme selfishness of nature—a nature not having the capacity of a true moral conception or altruistic feeling. Whatever opinion other experimental observers may hold, I cannot but think that the extreme passion for getting rich, absorbing the whole energies of life, does predispose to mental degeneration in the offspring—either to moral defect, or to intellectual or moral deficiency, or to outbreaks of positive insanity under the conditions of life."[3]

In this section, on "The Development of Sensibility," we have considered:—

1. Summary of Results.
2. The Stages of Feeling.
3. The Development of Sensibility.
4. Habitual Feeling.
5. Habitual Expression.
6. The Inheritance of Feelings.

REFERENCES: (1) Spencer's *Principles of Psychology*, II., Part VIII., Chapter II. (2) Dewey's *Psychology*, p. 76. (3) Maudsley's *Physiology of Mind*, p. 234.

PART III.—WILL.

1. Definition of Will.

Will is the power of self-direction, or of acting for self-chosen ends. It coöperates with Intellect, and directs it in all the higher processes of knowledge. It derives its principal ends of action from the feelings furnished by Sensibility.

Will has sometimes been confounded with psychical activity in general.[1] It has also been identified with the action resulting from the operations of knowing and feeling.[2] Both of these notions of Will fail to satisfy the demands of consciousness. We possess a power to *direct* our knowing powers and to repress certain of our feelings. This directing power is Will. **Dewey**, whose distinction between knowledge and feeling was noticed under the definition of Sensibility (page 221), in addition to the definition of Will quoted in that connection, says: "A union of feeling and knowledge in one and the same act is what we know generally as Will."[3] In this, as in his distinction between knowledge and feeling, he has been influenced by a supposed objectivity of knowledge, a subjectivity of feeling, and a relation between them which he calls Will. We cannot thus easily draw these distinctions. Knowledge, as we have shown, as individual *experience*, is subjective. Consciousness has not two "sides" between which Will is simply a "relation." Psychologically, that is, as revealed in consciousness, Will is not "a union of feeling and knowledge in one and the same act." Will is the power of the soul to direct its own activity, and each particular act of direction is a volition. Feeling and knowing are, undoubtedly, united in the same state of consciousness,—that is, as subordinate elements of the same general state of consciousness,—whenever any act of volition is performed, but Will is not this "union." We

need, however, to avoid the hypostasis of this faculty, as if it were a power separate from and above the conscious soul, playing the part of a sovereign ruler over it. **It is the soul itself exercising self-direction.**

2. The Study of Will Psychological.

We can discover the nature and limits of Will only by a psychological method of study, that is, by the examination of consciousness. The temptation is very strong to study Will mainly from the side of bodily manifestations, because action is so much more readily observed when it is external. If, however, we study Will through physical motion, we shall never understand it; for we shall never get beyond matter in motion, which is wholly different from an act of Will.

If we begin with the idea of a balance in the opposite scales of which weights are thrown, and regard these weights as representing "motives" having different degrees of power to affect the position of the scales,—we shall end with the conclusion that the "most powerful motive will prevail"; and we shall think of Will as wholly determined by the play of physical forces. But this is merely amusing ourselves with figurative language and deceptive analogies. A true psychological analysis shows us that such figures, borrowed from the physical world, have no more relation to the problem of self-direction through acts of volition than imaginary battles between mythical gods and goddesses. The subject is primarily psychological, and should be treated in the light of the facts of consciousness. If consciousness cannot be trusted to report faithfully how far our acts are self-determined, we have no right to employ it for any scientific purpose whatever, and all science ends in universal skepticism.

3. Two Modes of Action.

There are two modes of action which are distinguished in every language and by every person as being widely

different. They are: (1) **Involuntary Action,** or such as occurs without our conscious determination; and (2) **Voluntary Action,** or such as occurs with a conscious determination of the soul. In action of the first kind, Will is not an element. In action of the second kind, Will is the directing cause. The difference between these two kinds of action is not that we are unconscious of involuntary, and conscious of voluntary, action. We are conscious of both. The difference is that we are not conscious of directing involuntary action for any end, and we are conscious of directing voluntary action for some end, or purpose. The words "unintentional" and "intentional," "non-purposive" and "purposive," assist in marking this distinction. Let us, then, consider those actions in which Will is not present, and afterward those in which Will is the directing cause; or,—

(1) ***Involuntary Actions,*** and
(2) ***Voluntary Actions.***

REFERENCES: (1) Sully's *Psychology*, p. 572. (2) Bain's *Emotions and the Will*, pp. 310, 311. (3) Dewey's *Psychology*, p. 347.

CHAPTER I.

INVOLUNTARY ACTION.

DIVISION OF THE SUBJECT.

A complete survey of Involuntary Actions involves notice of (1) **The Motor Mechanism,** (2) **Instinctive Action,** and (3) **Acquired Action.** These are the topics of the following sections.

SECTION I.

THE MOTOR MECHANISM.

1. Structure of the Motor Mechanism.

The bodily organism serves both for the reception of sense-impressions through its sense-organs, which have been described, and for the communication of motion to the external world. It is not only a sensor, but a motor, mechanism. The body consists of bones, muscles, and nerves so combined as to bring the conscious self into relation with the material world. The **bones** of the skeleton (Figure 22, 1, 6, 7) furnish the levers, fulcrums, and points of muscular attachment necessary to mechanical effects. The **muscles** (Figure 22, 2, 4) supply connections between these articulated bones and also contain, stored

up in their tissues, contractile energy which, when released by the disturbance of its equilibrium, serves to move the bones. The **nerves of motion,** or motor nerves, are fibres running from the brain and other centres (Figure 1) to the muscles, in which they terminate, and serve to stimulate to action the contractile energy stored up in the latter. The motor mechanism thus forms a medium for reaction upon the outer world in coördination with the sensor mechanism for receiving sensations from without.

The amount of physical energy which the motor mechanism is capable of putting forth depends upon what is stored up in the muscles. It is not created at the moment when it is used, but is the product of previous organic processes. The action of the nerve upon the muscle may be compared to the action of a lighted match upon a powder-magazine. It does not create the force, but simply sets it free. We must not, therefore, think of the muscular force as derived from the nerve. An amount of nervous motion sufficient to stir a filament of the finest down may be sufficient to explode a muscular discharge that will knock down a man. These forces have not been accurately measured, but the illustration serves to illustrate the point that muscular energy is simply liberated, not generated, by the vibratory motion of a motor nerve.

2. Kinds of Motor Activity.

The motor mechanism is never wholly at rest. Many of the bodily processes, like digestion, the movements of the heart, and the circulation of the blood, are controlled by a system of forces with which the sensor-motor apparatus has little to do. But this apparatus is capable of motion also without either consciousness or volition. For example, if we tickle the foot of a person asleep, he draws it away without waking. The impression sent in by the

sensor nerves is communicated to the motor nerves at the centre where the sensor and motor nerves are connected, and the motion in the sensor nerves is translated into motion in the muscles, *without consciousness*. This is called **reflex action.** Sometimes the same kind of motion is made when the person, being awake, is conscious of it, but is not the cause of it; as when a person's hand is touched with the point of a pin and suddenly, without intention, yet *consciously*, drawn away. This is called **sensori-motor action,** to distinguish it from reflex action. Both reflex and sensori-motor actions are often very complicated. Walking, running, playing on musical instruments, etc., are often attended with very little self-direction. But these complicated actions are, as we shall see, all acquired. In both these cases, the motor impulses seem to be derived from the sensor impressions without the intervention of self-direction. There is also a third kind of involuntary action. As we have seen in discussing the Emotions (page 263), it is possible for the perception of incongruity to produce laughter by the involuntary reaction of the idea upon the organism. This is called **ideo-motor action.** All these modes of action are involuntary.

We have later on to distinguish between actions of the kinds just described which are original and those which are acquired. We shall see that many of these were voluntary actions before they became automatic. We shall ultimately arrive at greater clearness in the comprehension of voluntary actions by eliminating from them these involuntary actions which are so often confounded with them and, being taken for them, give to all our actions the appearance of physical necessity. If a decapitated frog can rub acid off his leg when he has no consciousness of pain from it, it is because provision is made in his organization for very complicated involuntary actions. If the postman of Halle, made famous by Hamilton,[1] could walk a

long distance when actually asleep, and waken only when his foot struck the rising ground at the end of the plain over which he walked while asleep, certainly many of our daily actions may be regarded as involuntary. If a well-disposed and sympathetic person can be so indecorous as to burst out laughing at some comical occurrence amid the solemnities of a funeral, the involuntary operations of both mind and body deserve to be carefully studied. It is not by ignoring these phenomena that we shall ever come to understand voluntary action, but by making their character perfectly distinct, in order that, when the lines of distinction are clearly drawn, we may discover how a really voluntary action differs from all of these. Those who would throw doubt upon these complicated reflex actions, or withhold them from view through fear that such evidence will prove that we are merely automata wholly in the power of physical forces, have most need to subject them to exact analysis, in order that voluntary action may have an opportunity of vindicating its real nature.

3. Psychical Control of the Motor Mechanism.

The soul is conscious of two distinct modes of control over the motor mechanism. These are :

(1) **Innervation.**—This is the process of concentrating energy upon a given point. The force of the muscles may be thrown into a grasp of the hand by a volition, or self-directing act, so as to give it a stronger grip. By fixing the attention upon certain parts of the body the blood may be directed to those parts. As we have seen in the study of Phantasy, a psychical reaction can reinstate some of the conditions of original perception and thus reproduce an image (page 90). In these cases there is consciousness of self-directing action for an end.

(2) **Inhibition.**—This is the process of arresting actions that tend to occur involuntarily in one of the three modes described. Thus, a patient in the midst of a dental operation has a tendency to cry out and leap from the

chair. A strong volition can sometimes prevent the cry and the springing from the chair. Even when it fails, we consciously know that self-directing power has been exerted. By this power of inhibition we can sometimes prevent the rising of ideas which tend to arise in consciousness, and thus anticipate and neutralize a result that would otherwise follow. Both these processes, however, frequently fail, and when they do, we say that the resulting action is involuntary.

Without attempting at this point to determine the nature of the innervating and inhibitory powers, we may call attention to their importance by a physical illustration. "The processes which produce voluntary motion begin by being a purely psychical excitation and insensibly become, by the natural play of the organic machinery, a physical excitation. In thus becoming transformed in their successive evolution, they present the fascinating picture we constantly see presented to us in the working of steam-engines. We see, in fact, in this case, how a force, slight at its commencement, is capable of being transformed, and becoming by means of the series of apparatus it sets at work, the occasion of a gigantic development of mechanical power. In fact, at the moment when the engine begins to work, a very slight force, the mere intervention of the hand of the engine-driver who turns a handle and lets the steam rush against the upper surface of the piston, would suffice for this. This active force, once at liberty, immediately develops its strength, which is proportional to the surface over which it extends; the piston falls, its rod draws down the beam; the power is developed as the fly-wheel revolves, and the initial movement, so weak at its commencement, amplifies and increases continually, in proportion as the volume and power of the mechanical appliances placed at its disposal become more considerable and more powerful."[2]

4. The Limitations of the Motor Mechanism.

There are two kinds of limitation to the activity of the motor mechanism. There are (1) **limitations of structure**

in the length, strength, and articulation of the bones; in the size, fibrous texture, and terminal attachments of the muscles, and in the quality and fineness of the nervous centres and connections. There are also (2) **limitations of energy.** The supply of physical force, both muscular and nervous, is a variable quantity. It is conditioned upon nutrition, health and exercise. There are times when one is stripped of all executive power. But none of these limitations affects volition. We may will to act without being able to act.

5. The Motor Mechanism and Education.

The motor mechanism is capable of training. Its perfection is the aim of physical culture. Modern Physiology has shown both the necessity and the methods of this branch of education, and its importance is at the present day very generally realized. The value of specific gymnastic exercises, under competent direction, needs not to be insisted upon. The spontaneous play of the motor powers in early childhood is closely connected with the acquisition of sense-knowledge, and movement, as we have seen, is essential to the development of Sense-perception.

In this section, on the "Motor Mechanism," we have considered:—

1. ***Structure of the Motor Mechanism.***
2. ***Kinds of Motor Activity.***
3. ***Psychical Control of the Motor Mechanism.***
4. ***The Limitations of the Motor Mechanism.***
5. ***The Motor Mechanism and Education.***

REFERENCES: (1) Hamilton's *Metaphysics*, p. 233. (2) J. Luys's *The Brain and its Functions*, pp. 326, 327.

SECTION II.

INSTINCTIVE ACTION.

1. Definition of Instinctive Action.

Instinctive action is action to which the agent is impelled by some impulse derived from his natural constitution, without knowing the cause or the purpose of the action. The tendency to act in this manner is called "**instinct**" (from the Latin *instinctus,* instigation). Such actions, although they do not originate from any conscious purpose of the agent, have an end; which is the conservation either of the individual or of the species to which he belongs.

The nature and origin of instinct have been much discussed by naturalists and have provoked much disagreement. **Spencer** says: Instincts are cases of "compound reflex action" resulting from "organized and inherited habits."[1] He seems to overlook the fact that before "habits" could be "organized" and "inherited" an organism must have existed already endowed with instincts, at least with the instincts of self-preservation and self-propagation. **Lewes** holds that all instincts are cases of "lapsed intelligence."[2] **Darwin** says: "I will not attempt any definition of instinct."[3] He adds: "An action, which we ourselves require experience to enable us to perform, when performed by an animal, more especially by a very young one, without experience, and when performed by many individuals in the same way, without their knowing for what purpose it is performed, is usually said to be instinctive."[4] And again, "If we suppose any habitual action to become inherited—and it can be shown that this does sometimes happen—then the resemblance between what was originally a habit and an instinct becomes so close as not to be distinguished. . . . But it would be a serious error to suppose that the greater number of instincts have been acquired by

habit in one generation, and then transmitted by inheritance to succeeding generations." [5] **George J. Romanes** (1848–), a Canadian naturalist resident in England, has treated the subject of Instinct very fully. He criticises very minutely all the other writers just named. His own definition of instinct is, "reflex action into which there is imported the element of consciousness." [6] All these discussions tend to show what chaos naturalists would make of Psychology if they followed a strictly objective method, without any appeal to consciousness.

2. Characteristics of Instinct.

That there is in man, but much more distinctly in the lower animals, a tendency to act instinctively, there is no doubt. It is best, therefore, to adhere strictly to this clear idea and not to confuse the mind with refinements. There are, however, certain characteristics of instinct as it appears in animal life concerning which naturalists are in substantial agreement. They are as follows:

(1) **Ignorance of the end.**—When a child instinctively takes nourishment, impelled by the impulse of hunger, it has no knowledge of the repair of the bodily waste as the natural end of its action.

(2) **Absolute fatality.**—Instinctive actions belong to the order of purely organic actions and are, therefore, physically necessary. They result from organic causes which operate according to physical laws and are entirely beyond the sphere of choice.

(3) **General uniformity.**—The instinctive actions of all the individuals of the same species are the same. It is through his knowledge of their instincts that man becomes master of the lower animals. He uses these instincts as he does physical forces and depends upon their universality and uniformity in the species.

(4) **Priority to experience.**—An instinctive action does not need to be learned. It is perfectly performed the first time, without observation or imitation. The bird builds its nest, the honey-bee constructs its honey-comb, the young duck takes to the water and swims, without any lessons.

Many naturalists hold that instinct is derived from experience, that is, from ancestral, not individual, experience. Let us take the case of the necrophore, or sexton-bee. Although this insect dies in giving being to its larva, it prepares for that larva, which it will never see, an animal food which it never uses itself, since it subsists on plants. What has taught the necrophore to make this provision for its offspring? No one of its ancestors has ever seen its progeny. It has never observed this action in others of its kind. Here is a typical case of instinct, imperative and universal, but unaccompanied with intelligence of its own end. Here is neither "organized and inherited habit" nor "lapsed intelligence," but a series of actions springing out of the natural constitution of the agent, related to an end, but unconscious of it.

3. Instinct and Intelligence.

Without disputing about names, there are two kinds of action entirely antithetical. Instinctive action, as we have seen, is action without consciousness of an end. Intelligent action is action for a consciously known end. In so far as an agent acts without knowing for what end he is acting, his action is non-intelligent. Instinct and Intelligence are, therefore, directly opposite. In so far as we act from instinct, we do not act from intelligence. In so far as we act from intelligence, we do not act from instinct. In the animals below man, instinct predominates over intelligence. In man, intelligence predominates over instinct. They exist in an inverse

ratio. Being opposite principles, they are not derived from each other.

We have seen (page 44) that the lower animals are born with an almost complete adaptation for the performance of their life functions, while man in infancy possesses the least of automatic adaptation to the conditions of life. "Important reasons suggest themselves," says **Porter,** "why the animal is taught and impelled by instinct to do at once, and with little exposure to failure, what man can attain only by slow and painful acquisition, and at the risk of many failures and sufferings. The discipline to which man is subjected has respect to his moral culture as well as to his intellectual perfection and success. He needs to learn patience, caution, foresight, self-distrust, and circumspection, as well as the higher virtues. All of these are furthered by the processes through which he must pass in gaining the acquired perceptions. It is by the adaptation of this discipline to high moral uses, that is explained the law of nature by which man is born the most ignorant and helpless of all animals, and forced, as it were, to make his acquisitions by his own sagacity, as fast as he is impelled by the appetites, desires, and affections which are evoked from his at first undeveloped soul."[1] While instinct enables the animal to do a few acts well, it binds him fast in the small circle of these acts. Intelligence, which at first reaches its ends with feebleness and uncertainty, broadens man's field of activity, adapts him to every environment, and fits him for the attainment of all his ends, making him at last interpreter and master of all the conditions of life. Instinct marks the power of the body over the soul; intelligence marks the soul's power over the body.

4. The Instincts in Man.

In man instinct, which is the predominant directing principle in animals, gives place to intelligence. Still, there are in man, who also possesses an animal nature, certain tendencies to act, sufficiently universal and uniform to deserve the name of instincts. They afford the

original nuclei about which the appetites and desires form themselves. They may be divided as follows:

(1) **Instincts preservative of Self.**—These are (*a*) **Nutritive,** impelling us to seek food for the maintenance of life, although this pursuit soon falls under the dominion of intelligence; and (*b*) **Protective,** impelling us to seek our safety either by flight from danger or by resisting and destroying our foes.

(2) **Instincts preservative of the Species.**—These are (*a*) **Sexual,** impelling those of opposite sexes to seek each other's companionship, sometimes without a consciousness of the end of nature in implanting this tendency; (*b*) **Maternal,** impelling the mother to care for her child, even at the cost of her own life, if necessary, and irrespective of the child's beauty or promise; and (*c*) **Social,** impelling men generally to unite in communities for intercourse and mutual defense. The tendency to employ signs as the medium of emotional and rational communication, or language, is a form of the social instinct. Emotional language—facial expressions, gestures, and vocal tones and inflections—shared also by many animals, is almost entirely instinctive. Imitation is based on organic conditions (page 287) and affords the impulse that leads to the acquisition of a particular language by children. Curiosity also seems to have its roots in an instinct for knowledge.

Contrast the maternal provision of the sexton-bee for its offspring with that of a human mother, and one sees at once the contrast between instinct and intelligence. The insect knows nothing of its progeny, but is directed precisely what to do for it, in order to provide for its well-being. The human mother knows that her child is sick, but must use her intelligence in caring for it. Her instinct

prompts her intelligence to act for the interest of her child, but does not prescribe *how* she should act. The human instincts merely prompt to action; the *mode* of action is left to intelligence. For the animal, guided by instinct, there is but one way to act, and his organization contains provision to make him act in that way. For man, guided by intelligence, there are many ways of acting, and through his intelligence he makes a choice of the one he will adopt. Through experiment he learns new and better ways, and this is progress, of which the animal is, by himself, incapable. The human instincts furnish only hints, leaving the problems of life to be worked out by the aid of reason and experience.

5. Relation of Instinct to Education.

Instinct has important relations to education. It reveals a plan in nature which personal intelligence of every grade ought to respect. It is the climax of teleology as exhibited in the physical and organic world. Not only has the organizing power constituted organisms, but provision has been made in their constitution for their preservation and perpetuation. In the presence of this truth, we have to observe (1) that instinct is capable of being overruled by intelligence, and (2) that no natural instinct requires to be destroyed.

(1) **Instinct may be overruled by Intelligence.**—This is evident both from the virtues and the vices of men. In the moral order of human society, we see the animal instincts regulated by principles that limit the performance of instinctive actions. While virtue shows the animal instincts restrained by moral law, vice shows them destroyed by sophistry. Thus, the maternal instinct, which prompts a mother to care for her child, may be overcome by false principles, which induce her to destroy it. Thus instinct is modified by intelligence for both good and evil.

(2) **No natural instinct requires to be destroyed.**—As related to natural ends, instincts have their reason for existence. As man possesses both a rational and an animal nature, instinct in man must be harmonized with reason. Instinct, which furnishes a complete law for the purely animal nature, does not furnish a perfect law for a rational nature. The instincts need not be destroyed, for they furnish a law for the lower nature. They should be regulated, however, because in man this lower nature is united with a higher. The moral law requires us to love our neighbor *as ourselves*, but does not require us to destroy the instinct of self-protection. A false system of education may crush out every manly instinct, but in doing so it has done what reason itself cannot justify. The first duty of the educator is to know what the natural instincts in man are, the second to respect them as laws of human nature, the third to limit instinct to its proper sphere by subjecting it to moral law, which is the law of the higher nature.

There are, indeed, "tendencies," "habits," and "inherited dispositions" which require to be repressed and extinguished, but these are not natural instincts. They are the abnormal excrescences of individual life, not instincts universally inherent in the human species. Cruelty, destructiveness, etc., for example, are tendencies of this kind very common in man, but they are not universal, they have no natural purpose, they are not, properly speaking, human instincts. This is shown very well by the common judgment which pronounces them "inhuman." They are individual tendencies, sometimes inherited, it may be, sometimes individually acquired, but not instincts in the sense here intended. And yet, as Darwin has said, "the resemblance between what was originally a habit and an instinct becomes so close as not to be distinguished." This, however, simply indicates the limitation of our discerning power.

In this section, on "Instinctive Action," we have considered:—

1. ***Definition of Instinctive Action.***
2. ***Characteristics of Instinct.***
3. ***Instinct and Intelligence.***
4. ***The Instincts in Man.***
5. ***Relation of Instinct to Education.***

REFERENCES: (1) Spencer's *Principles of Psychology*, I., Part IV., Chapter V. (2) Romanes' *Mental Evolution in Animals*, p. 257. (3) Darwin's *Origin of Species*, pp. 205, 206. (4) *Id.* (5) *Id.* (6) Romanes' *Mental Evolution in Animals*, p. 159. (7) Porter's *Human Intellect*, p. 177.

SECTION III.

ACQUIRED ACTION.

1. Definition of Acquired Action.

We inherit a nature, but we acquire a character. Human nature is essentially the same in all human beings. Character is variable and assumes new forms in different persons. An acquired action is called a **Habit.** It consists in a disposition to repeat itself whenever favorable circumstances are afforded. Thus, any particular movement of any bodily organ repeated many times becomes a habit, or acquired action. A particular activity of any psychical faculty also tends to become a habit. Man is sometimes described as "a bundle of habits." He is this, but he is more; for underneath these habits, which are characteristic of the individual, is the nature that is common to all men,—the plastic humanity that may be conformed to many moulds of manhood.

Habit is sometimes called "**a second nature.**" This expression very well marks the distinction between purely natural and acquired activity. Habit is activity in the process of becoming nature. Owing to the law of heredity, it is difficult to draw the line between instinct and habit; for the habits of one generation seem to merge into the instincts of the next. We are here confronted with the problem that meets us everywhere, the discrimination of the primordial from the secondary. We must, however, have words to indicate a distinction so clear as that between inherited and acquired activities. The ordinary usage of language has restricted the word "habit" to the activities acquired by the individual.

2. The Origin of Habits.

Habits originate either from external circumstances or from an act of Will. Many habits are induced by conditions in our surroundings to which we give little attention. We adapt ourselves to our environment, and habits are spontaneously formed. Other habits originate from a specific act, or series of acts, of Will. This is the origin of most of our complex habits; such as reading, writing, playing on musical instruments, etc., which require repeated and attentive mental direction in order to establish them. In general, habit is organized by repeating an action. It is disorganized by discontinuing the action. A habit which is common to many persons, or widely prevalent among them, is called a **custom.** Customs are the habits of communities.

The origin of habits shows how far one is responsible for their formation and continuance. Although a habit may be formed without any act of Will, that is, without an intention that it shall be formed, the agent is responsible for its existence, because it might have been prevented. No habit can be formed, if we refuse in the beginning to perform the act which, by repetition, results in the habit. Again, there is provision in our nature for the disorganiza-

tion of habits, even after they have been formed. No act can take place except under certain conditions. We can remove, or refuse to fulfill, the conditions which an activity requires; and, deprived of its opportunities, the habit is destroyed.

3. The Laws of Habit.

There are two laws of habit which are of great significance:

(1) **The Law of increasing Automatism.**—This may be stated as follows: **Habit diminishes feeling and increases activity.** The tendency of feeling to disappear from habitual action is well known. The chemist becomes insensible to the bad odors in the laboratory, the hunter to the sensations incident to exposure, the surgeon to emotional sympathy with pain. In order to produce from day to day the same exhilarating effects of alcoholic drink, the dose must be progressively increased. Hence, the tendency of the drinker to increase the quantity or the quality of his potations. At the same time that feeling is diminished, activity of a specific kind is increased. The chemist performs his experiments with greater ease, the hunter more readily discovers and secures his game, the surgeon cuts more skillfully. Although an intoxicant produces less feeling, it comes to be imperatively demanded. Habitual action becomes automatic, liberating consciousness and attention for new uses. The expert writer, whose whole mind was at first given to the motions of his hand, finds the operation of writing almost mechanical, and his higher faculties are free to occupy themselves with the current of thought.

There is an **apparent exception to this law.** Habitual feelings seem to be increased in amount. This increase is only relative, not

absolute. If the feeling does actually increase in amount, it is because the activity increases in still greater proportion. The miser, as we have seen (page 285), experiences a growing desire for money, but his enjoyment rather diminishes, while his efforts to procure it increase. The habitual scold loses sensibility to her own detractions, while her fault-finding activity becomes incessant. At last, the pain of her censures falls upon other people more than upon herself and she degenerates into a fault-finding machine! Happily, the pain of being scolded also diminishes as much scolding is experienced, until, finally, we regard the most violent explosions of wrath as we do other inevitable natural phenomena, as, for example, a thunder-storm or a tempest!

(2) **The Law of destination of Character.**—This law may be stated thus: **Habit tends to become permanent and to exclude the formation of other habits.** An acquired action not only tends to be easily repeated, but to render impossible the acquisition of new modes of activity of a different kind. The greatest obstacle to the formation of a habit is the existence of its opposite. Thus habit forms character, and character determines destiny.

4. Cerebration.

The laws of habit are, doubtless, universal. If so, they govern to some extent the activities of the brain as well as those of other organs. The action of the brain is called "**cerebration**" (from the Latin *cerebrum*, brain). How far can the habitual activities of the brain affect our mental processes? The sight of a sharp stick thrust toward one's face, causes him to dodge the expected blow involuntarily. If so complicated an action as this can occur automatically, what limit is there to the actions which may be thus explained as purely involuntary? It cannot be shown that we should dodge, or perform any

similar complex action, if we were not *conscious*. The cause of our dodging is the involuntary reaction of the *idea* upon the motor mechanism, which has acquired certain particular movements. An infant that has never been hurt, does not dodge when a blow is aimed at it. An adult, who has been hurt, can hardly prevent the involuntary motion. The action, then, is *ideo-motor* (page 314). Carpenter and some other physiologists consider that "*unconscious* cerebration" also may cause such complex actions, and employ this assumption in explaining many singular phenomena.

Carpenter thus explains the solution of problems and other intricate processes in sleep. He gives many examples of such alleged performances.[1] A prominent specialist in abnormal psychology comments upon these explanations as follows: "It is quite true that, after long puzzling ourselves to see the true relations of things, it now and then happens that they suddenly, as it were, present themselves to our mind, and the difficulty is at once solved, like a whole landscape seen by a flash of lightning; but this affords no proof that we have been working at it unconsciously, it merely shows that the mind is sometimes more rapid and powerful in its operations than at others. Occasionally, as in recollecting where we put lost objects, it is owing to an idea crossing our mind which lights up a lost train of associations. As well might the wearied marksman whose shoulder is sore, and whose gun trembles in his hand so that he shoots wide of the mark, but who finds next morning that he can hit the centre—as well might he conclude that he had been unconsciously practicing in his sleep."[2] The exaggerated extent to which Carpenter would carry his theory is illustrated by this passage. "An expert calculator, who may have originally had no more than an ordinary facility in apprehending the relations of numbers, casting his eye rapidly from the bottom to the top of a column of figures, will name the total without any conscious appreciation of the value of each individual figure; having acquired by practice somewhat of that *immediate insight*, which is so remarkable a form of intuition in certain rare cases. It is certain that a dis-

tinct ideational state must have been *originally* called up by the sight of each individual figure; and yet an impression made by it upon the cerebrum, which does not produce any *conscious* recognition of its numerical value, comes to be adequate for the evolution of the result."[3] Such cases must be "rare," indeed, and it would be interesting to find an accountant who could add up a column of figures correctly without being conscious of each figure as he passed it! "Immediate insight" which is "unconscious" is certainly not far from a plain contradiction in terms. The evidence that any man can do what Carpenter here describes is not only wanting but impossible. As Ireland adds, "It is certainly a bold statement to say that a man can add up a column of figures without the mind being conscious of any of them. Common-sense would surely reply, that if the accountant were unconscious of even one of the figures, he would not add it up along with the rest, and his addition would thus be incorrect."[4]

5. Hypnotization.

The theory of unconscious cerebration is employed to explain the phenomena of Hypnotization (from the Greek *ὕπνος, hypnos,* sleep) or artificial sleep. The interest attaching to these phenomena requires that we should consider (1) the hypnotic state, (2) the hypnotic actions, and (3) the explanations offered.

(1) **The Hypnotic State.**—The hypnotic state consists in the fixing of the attention of the person about to be hypnotized upon some particular object; as, for example, the finger of the operator held before the eyes, or the subject's own finger. A condition in outward appearance not unlike natural sleep is realized, although the mind is still open to suggestions. The subject remains conscious, but there is absence of self-suggested ideas and suspension of all voluntary action. The state may be produced without an operator by the subject himself. When in the hyp-

notic state, the subject's consciousness is accessible to ideas suggested by another person.

(2) **The Hypnotic Actions.**—In this state, the subject is open to *any* suggestion made by the person with whom he is in relation, but usually he is conscious of *nothing else.* When his arm is raised and he is told that he cannot lower it, he is powerless to do so. When he is told that he has a pain in a particular place, he acts as if he had. When directed to rise and walk and to perform other similar actions, he instantly obeys, usually with the eyes closed. There are degrees of hypnotization, and some persons seem incapable of assuming this state. In cases of complete hypnotization, the subject is powerless and his organism responds only to ideas suggested by the operator.

(3) **The Explanations offered.**—Some attempt to explain these phenomena, which are now too well known to be disputed, by **unconscious cerebration.** This explanation is inadequate for the following reasons: (*a*) the subject is *conscious* in the hypnotic state;[5] (*b*) the actions performed are suggested by *ideas* alone, and it is absurd to speak of unconscious ideas; (*c*) the subject, although he does not ordinarily remember the events of hypnotic action, is able to *recall* them after waking, upon suggestion. **The true explanation** appears to be as follows: (*a*) the fixing of attention produces an *arrest* of the ordinary activities of the brain; (*b*) the ordinary activities of the brain being arrested, a condition of unstable *equilibrium* is produced; (*c*) this unstable equilibrium renders easy an involuntary *ideo-motor action* when any particular idea is formed by suggestion in the consciousness of the subject; (*d*) an idea is *suggested* to the mind of the subject by the hypnotizer; and (*e*) this idea *reacts involun-*

tarily upon the brain, producing a corresponding ideo-motor action. All is involuntary, but all takes place through consciousness. In sound sleep, when consciousness is suspended, if it ever is wholly suspended (page 19), suggestions have no effect unless they awaken the sleeper, who then comes into voluntary command of his faculties and is not automatically influenced by suggestions. The state of hypnotism seems to be one in which Will is surrendered and ideo-motor action is left automatic.

The history and theories of Hypnotism are too full of complicated details for satisfactory treatment in an elementary work. Those who are interested in the subject may obtain information by consulting articles in the encyclopedias on "Mesmerism," "Odyle," "Electro-biology," etc. The phenomena now known under the name of "Hypnotism" were taken out of the almost exclusive possession of charlatans and fanatics by **James Braid**, an English experimenter, who, in 1841, laid the foundations of a scientific treatment of these obscure facts. They have since been extensively discussed by Carpenter, in his "Mental Physiology," and by many others. Many very remarkable examples are to be found in "Phantasms of the Living," by Edmund Gurney and others, published for the Society for Psychical Research. The discussions include hypnotization at a distance. Shorter accounts may be found in "Mind," volumes VI., p. 98, by G. Stanley Hall; IX., p. 110, by E. Gurney; IX., p. 477, by Gurney; and XII., p. 212 and 397, by the same. An article on "Reaction-time in the Hypnotic State," by Hall, may be found in VIII., p. 170. Hypnotism has been applied to curative purposes, and a full account of the results and the theory of hypnotic therapeutics may be found in "De la Suggestion," par le Dr. H. Bernheim.

6. Somnambulism.

Hypnotization is closely allied to **Somnambulism** (from the Latin *somnus*, sleep, and *ambulāre*, to walk), or sleep-walking. This phenomenon assumes a great variety of

forms. Persons talk, walk, write, and climb dangerous places, without being awake. Such experiences are usually forgotten by the subject after waking, but may be remembered when he is again in a similar condition, and sometimes when the link of association is given by suggestion. There is evidence that the somnambulist is conscious when in the somnambulistic state, but only of those ideas and actions which are connected with his performances. Somnambulism seems to be a form of ideo-motor action, but it is not certain that Will is not sometimes present.

It would be easy to cite a great number of **interesting and curious cases.** The following is narrated of a distinguished Scotch lawyer: "This eminent person had been consulted respecting a case of great importance and much difficulty; and he had been studying it with intense anxiety and attention. After several days had been occupied in this manner, he was observed by his wife to rise from his bed in the night, and go to a writing-desk which stood in the bedroom. He then sat down, and wrote a long paper, which he carefully put by in his desk, and returned to bed. The following morning he told his wife that he had had a most interesting dream,—that he had dreamt of delivering a clear and luminous opinion respecting a case which had exceedingly perplexed him; and that he would give anything to recover the train of thought which had passed before him in his dream. She then directed him to the writing-desk, where he found the opinion clearly and fully written out; and this was afterwards found to be perfectly correct." [6] In this case, there was evidently consciousness of the writing at the time it was performed, afterwards remembered dimly as a dream. In the following case, there was no memory except in the somnambulistic state. "A servant-maid, rather given to sleep-walking, missed one of her combs; and being unable to discover it, on making a diligent search, charged a fellow-servant who slept in the same room with having taken it. One morning, however, she awoke *with the comb in her hand;* so that there can be no doubt that she had put it away on a previous night, without preserving any waking remembrance of the

occurrence; and that she had recovered it when the remembrance of its hiding-place was brought to her by the recurrence of the state in which it had been secreted."[1]

7. Language.

The involuntary use of language illustrates the extent to which a purely automatic activity may reach. Who has not cheerfully said, "Good morning," to a friend casually met upon the street, and suffered from confusion by the immediate recollection that it was evening? Here the impulse has been given to the vocal organs to say something, and they have automatically uttered something absurd. The linguistic mechanism includes auditory organs, through which we receive sounds, and the phonetic organs, such as the tongue, lips, and teeth, with which we produce sounds. Between these there are lines of communication in the nervous system. Certain sounds, as exclamations of pain, are purely reflex. Habituated by frequent use to the formation of definite sounds, the phonetic machinery sometimes acts involuntarily. As language is the instrument of thinking, we sometimes think in audible sounds. Many persons never read to themselves without moving the lips. Even when no outward signs are given, it is probable that the internal parts of the linguistic machinery are at work, and this silent thinking in words has been called "**intra-cranial speech.**"

The **mechanism of language associations** may be better understood by reference to Figure 23. Let *I* be a sensor impression. By hearing it may pass to the auditory centre in the brain, *A*. By sight it may pass to the visual centre, *V*. By touch it may pass to the tactile centre, *T*. Thus, a word may be known as a sound, as a collocation of letters, or as a group of sensations of touch, as in the

raised letters of the blind. Now when associations are formed between these, sounds may be translated into sights, as when one writes notes of a lecture to which he listens. In the reverse case, sights may be translated into sounds, as when one reads aloud. The circuit, then, would be as follows: In writing from dictation, the impression, *I*, goes to the auditory centre, *A*, then to the speaking centre, *S*, for translation into words, then to the writing centre, *W*, and finally issues as written expression, *E*. This result, written words, may then be received as a new impression, *I*, passing to the visual centre, *V*, thence to the writing centre, *W*, being translated into speech at *S*, and issuing through that centre as a new expression, *E*, this time spoken. If anything like this takes place in the brain, it is evident that disease at *A* would be deafness, disease at *V* would be blindness, disease at *S* would be aphasia, disease at *W* would be agraphia. **Ferrier** and others hold that something of this kind is true. He localizes the organ of speech in the region of the posterior extremity of the third left frontal convolution of the cerebrum (Figure 4). The paralysis of this centre is said to result in the loss of speech, or aphasia.[8]

The French philosopher, **J. G. Cabanis** (1757–1808), seriously maintained that thought is identical with language, and language is simply the automatic movement of the organs of speech. **Max Müller** borders upon the same doctrine, though he does not explicitly state it, in his motto, "No reason without language, no language without reason." While, as we have seen, there is no rational speech without reason (page 137), it is by no means clear that there is no reason without language. Laura Bridgman had reason before she had language. Every child has reason without language. **Reason is the pre-condition of rational speech,** not identical with it. In the process of naming, the mind first abstracts and selects a quality to be named (page 137). If we are sometimes betrayed by the automatic action of our vocal mechanism into blunders which seem ridiculous, we also know that in all **constructive thought** the ideas outstrip the words and we frequently have ideas for which we can find no words. Language is so far from being automatic that every dialect furnishes evidence of an organizing power conscious of its own formative influence and expressing its freedom of choice in terms and propositions that distinguish sharply between the involuntary and the voluntary.

8. The Acquisition of Language.

Language has to be consciously acquired by every individual for himself. Parentage is not known to give any advantage in acquiring a particular language, for the child learns only what he is taught. The steps are (*a*) *attention* to particular sounds, those who are deaf being usually also mute; (*b*) *association* of meaning with sounds, which reveals the intervention of mind and the insufficiency of automatism to explain language; (*c*) *imitation* of sounds, which can result at first only from the tendency to find a means of rational communication; and (*d*) *co-ordination* of sensor and motor processes until they become almost automatic. It is evident that the acquisition of language requires a rational intelligence and a certain amount of conscious self-direction.

If language and reason were identical, it is evident that reason could be imparted to any being capable of language. The parrot utters articulate sounds with a startling accuracy, and when we hear this bird pronouncing whole sentences, as it may be taught to do, it seems as if it possessed a corresponding intelligence. But it requires very little investigation to convince us that this is a mistake, that the parrot does not understand its utterances, and produces them in a purely automatic fashion. The most sagacious of the domestic animals do, indeed, sometimes seem to understand simple words or short sentences, but there is room for gross self-deception here also. It is evident, however, that we cannot arrange any conventional system of signs of such a nature as to establish rational communication with dogs and horses; much less can they produce such a system themselves. It is possible that the admirers of animal intelligence, who resent every depreciation of it as if this depreciation were an insult to their dumb friends, may have the patience to attempt to evoke by a system of signs some of the peculiarities of the canine and equine consciousness! Science, in the meantime, respectfully awaits these desirable results, which would throw so

much light on comparative psychology; but, until they have been produced, must be content to draw a broad line between man and all these animals and attribute to him a rational power, and a power of self-direction as a consequence of it, which it does not find in them.

9. Habit and Education.

There are two extremes of doctrine held by educational theorists: the first regards all human actions as acquired; the second regards them all as native. The truth probably lies between these extremes. No action can be acquired unless a faculty for it belongs to the constitution of the being who attempts to perform the action; every action can be rendered more perfect by habituation. The laws of habit are of prime importance in education, for its principal aim is to induce certain habits of mind and body in the pupil. And yet its aim is not to produce mere automata. Pursuit of truth, submission to rightful authority, and industry are general habits absolutely necessary to a well-educated mind. The first condition of progress in knowledge is the formation of proper habits of study. The school cannot impart great learning, but it may form in the learner habits that will, in the course of a life-time, lead to great accomplishments. Attention, patience, and activity are the cardinal virtues of scholarship, and these are the most precious fruitage of the school. In the earlier stages of education, the first duty of a teacher is that of a **drill-master.** His efficiency does not depend so much upon the knowledge he imparts as upon the habits he induces. But there is danger of **extreme habituation.** No mere machine, however perfect, can perform the functions of a man. As the mechanical theory of mental action fails to account for the whole of

the psychical life, so the mechanical theory of training fails to produce an educated mind. Therefore, while the teacher should endeavor to aid the learner in forming proper habits, and thus render certain actions as nearly as possible automatic, he should not forget that by this very process **the power of self-direction is liberated for new adaptations,** and this power should be guided along the path of progress.

In this section, on "Acquired Action," we have considered:—

1. ***Definition of Acquired Action.***
2. ***The Origin of Habits.***
3. ***The Laws of Habit.***
4. ***Cerebration.***
5. ***Hypnotization.***
6. ***Somnambulism.***
7. ***Language.***
8. ***The Acquisition of Language.***
9. ***Habit and Education.***

REFERENCES: (1) Carpenter's *Mental Physiology*, pp. 532, 537. (2) W. W. Ireland's *The Blot upon the Brain*, pp. 226, 227. (3) Carpenter's *Mental Physiology*, pp. 529, 530. (4) Ireland's *The Blot upon the Brain*, p. 229. (5) *Mind*, for October, 1884, p. 481. (6) Abercrombie's *Intellectual Powers*, p. 306. (7) Carpenter's *Mental Physiology*, p. 596. (8) Ferrier's *Functions of the Brain*, pp. 444, 445.

CHAPTER II.

VOLUNTARY ACTION.

DIVISION OF THE SUBJECT.

Having examined in detail the different forms of involuntary action, we now proceed to consider voluntary action. That there is such action, we cannot doubt; for, if we did not know it in our experience, we should consider all action involuntary, and the distinction would not be made. We are conscious of both voluntary and involuntary actions, as taking place in us, but in the case of voluntary actions we are conscious of being *causes*, not simply *instruments*. We have to consider: (1) how we are influenced to action through our Sensibility—or **Solicitation**; (2) how we represent to ourselves an action, before it is performed, through our Intellect—or **Deliberation**; and (3) how we finally execute an action by Will—or **Volition.** We shall then conclude with some account of the **Development of Will.**

SECTION I.

SOLICITATION.

1. Definition of Solicitation.

Solicitation is a process of *invitation* to action as distinguished from *compulsion.* When we are moved by a

physical force acting upon us bodily, as when we are swept before a tempest, we are compelled to move in the manner determined by this force. But we are capable of a different kind of action. Having tasted of a certain food and having found it pleasant, we are influenced to perform certain actions, in order to procure more of that food. In this case, we are solicited, but not compelled, to act. We direct ourselves in the performance of this action for a specific end.

2. Motors and Motives Distinguished.

A physical force, whether outside of us or within us, produces certain movements which are capable of measurement and calculation. Such forces are called **motors.** The human body, as a complex mechanism, is moved by such motors. All action resulting from the play of these motors is involuntary. Solicitation, however, influences us through **motives.** A motive is not a physical force and has no physical properties. A motive is a reason, a purpose, or end of acting, addressed to a conscious intelligence and deriving its value from the prospect of some pleasure to be afforded or some pain to be avoided.

The modern doctrine of **the correlation and conservation of forces** may be stated as follows: There exists a definite quantity of energy whose different modes are correlated and convertible and which is absolutely persistent, being subject neither to increase nor diminution. Whatever happens is caused by some transformation of this definite quantity of force. Some would go so far as to apply this theory to sensations and volitions, which are considered as phenomena of the organism, and as transmutations of energy. It is a mere assumption to regard sensations and volitions as phenomena of the organism; they are phenomena of consciousness. It has not

been shown that consciousness is an effect of which the organism is the only cause. We know that the intensity of a sensation does *not* increase in direct proportion to the stimulus (page 60). We cannot affirm that more physical force is expended when consciousness is produced than when it is not produced. That consciousness, without being correlated to the physical forces, intervenes to interrupt a reflex act, we know by experience in our successful efforts to inhibit such reflex acts (page 315). If consciousness has no power to intervene between a sensor impression and a motor action, it loses its entire significancy (page 96). While sensation and volition cannot be proved to abstract any force from the circuit of physical forces, they cannot be proved to add any. The law of conservation of energy may be universally true; we certainly cannot contradict it. But without the loss of force the physical circuit may affect the conscious self by inducing it to act upon the occasion of its presentations, and the conscious self may affect the physical circuit by a reaction upon it that does not increase the amount of force. We know too little of the action of any physical force whatever to say that one system may not influence another without a loss of energy. The signalman uses no more energy in showing a red light than in showing a white light when they stand side by side, but it makes a vast difference with the fate of a train which light is shown. The effort of the engineeer is the same whether he sees a red light or a white one, but the difference is momentous. To say that the sight of the red light physically forces the engineer to shut off steam and throw on the air-brakes, while the sight of the white light inhibits any such action, is to make him out the helpless and irresponsible machine that all human experience shows he is not. If the law of the conservation and correlation of energy is universal in the realm of physical forces, there is certainly a superorganic power in the constitution of man. If there is not, all human action falls fatally under the category of mechanical action, personal responsibility is completely imaginary, and the well-marked distinction between voluntary and involuntary action is obliterated.

3. The Origin of Motives.

A motive can exist only in a conscious intelligence. It is not an efficient cause, but a final cause (page 189). It

is an idea, not a thing. My motive in procuring palatable food is the enjoyment of it. That enjoyment is not present, but future. It is the idea of enjoyment that prompts me to action. A motive, then, requires the formation of an idea of some expected good, which then constitutes a reason for acting. The action is not caused by the motive, but the motive is accepted by the agent who is himself the cause of the action. This is what consciousness teaches us in the analysis of any voluntary act. In reply to the question why have you acted thus? we answer, For such or such a purpose.

Motives have been considered by the American theologian and philosopher, **Jonathan Edwards** (1703–1758), and many others as if they were physical forces impelling the soul to action. Edwards says: "If every act of the Will is excited by a motive, then that motive is the cause of the act of the Will."[1] And again: "It is that motive which is the strongest that determines the Will."[2] This is to reason as if motives were motors, and to treat the subject as if it were a problem to be worked out according to the laws of physical force. This false analogy has resulted in a complete physical fatalism for every mind that has followed it to its logical conclusions. But it is evident that the analogy is a false one. The laws of physical force cannot be applied to the operations of an intelligent agent. A motive, or expectation of satisfaction through the realization of an end, does not necessitate a particular line of conduct. There are, indeed, appetites which urge us to the immediate gratification of a craving. Here is exhibited that "law of the members" which wars against the "law of the mind," and which cannot always be resisted. But these are forces that necessitate action. They are motors, not motives. They are not solicitations to action so much as compulsions. Having examined so fully in detail this involuntary element in our lives, it is not necessary to dwell longer upon it. It is important, however, that every one should distinguish from it that other element in experience which we call voluntary.

4. The Qualities of Motives.

Motives do not possess quantity in the sense that physical forces do. They cannot be measured and equated as quantities of force can. Motives, however, possess quality. They may be characterized as "worthy" or "unworthy," "good" or "bad," "right" or "wrong." The quality of motives is determined entirely by their relation to the law of action which the agent knows is binding upon him.

The difference between quantity and quality in the preceding paragraph may require explanation. So far as the quantity of force is concerned, we are certain that it cannot be increased or diminished by an act of Will. It having been imparted to the individual, his power is measured, for the moment, by his amount of force. Quality, however, cannot be thus measured, and hence many different kinds of action may result. To illustrate this distinction : It is undoubted that the same amount of force may be employed in shivering a block of marble into fragments, or in chiseling it into a human form. In the one case, we have a mass of rubbish ; in the other, the immortal Greek Slave. Thus far the law holds good, that no new physical force is created and no force is lost. But what influence, that is, what qualitative power, has the mass of marble wantonly broken to draw men together to see it and to excite their admiration ? The Greek Slave, on the other hand, attracts thousands, and will continue to do so as long as it exists. Is the attractive force of this beautiful piece of statuary correlated with the physical power put forth by the artist in creating it ? Is the law of the conservation and correlation of physical forces, then, violated ? Not at all. The attraction of the statue lies in its *qualities*. Quality is not a product of physical force, but of intelligence. Intelligence, then, may create qualities which move vast multitudes through successive ages ! Here is the emergence of a new factor. Virtue and vice are not quantities, but qualities. It requires as much physical force to steal a dollar from another's pocket as to take a dollar from one's own and give it to a worthy pauper. The motives, however, differ in quality. The immeasurable distance between honesty and

dishonesty, innocence and guilt, holiness and sinfulness, is wholly a matter of quality. Moral impotency, wherever it exists, is not a question of the quantity of force, but of the quality of the character.

5. The Relation of Motives to Feeling.

A motive derives its value from its relation to feeling. If things had no power to affect our feelings in any manner, they would not solicit us to action, for they could suggest no motives. There would be no reasons for acting. Inaction would produce the same result as action. Hence, no effort would be put forth by us.

This is well understood by the rhetorician, and furnishes the ground for that **appeal to the feelings** which is so essential in all practical eloquence. We should distinguish between reasons for *believing* and reasons for *doing*. We are led to believe by argument, but our beliefs do not always lead us to act. In order that we should act, there must be reasons not only for believing certain propositions true, but for considering such propositions as grounds of action. Suppose I know that, at the present moment, a ship is sinking in the middle of the ocean. I may know that, but I do not act. My action will not save the ship. But suppose I know that a person next door is starving, and that I can save his life by sending him food. My sympathy is touched, I imagine myself in his place, I imagine how I shall feel in the future if this person starves to death and I do not save him. I wish to avert that death, those sufferings, and my own feelings of regret. Here are motives, or reasons not only why I should *believe*, but why I should *act*. Now the business of the orator, who would move men to action, is to make them *feel*, for in the feelings lie the materials of motives. The method by which feeling is produced has been considered in another place (page 253).

6. The Classification of Motives.

The relation of motives to feeling furnishes ground for their classification. Every variety of feeling affords the

basis of a motive; for, as it has some quality of pain or pleasure, it may be an object of desire or aversion. As these vary in different persons, so the value of motives varies. A motive very influential with one person, will have little influence with another. Voluntary action is not, then, the result of a conflict of motives, each one of which has a particular force, so that one may be called "stronger" than another. What we figuratively call the "strength" of a motive is the esteem in which an intelligent agent holds it.

The relative value of a motive, according to the doctrine just stated, depends upon the conscious agent. It is difficult to see how any one who has analyzed the process of voluntary action can doubt this. But it may be said that these variations in the individual characters need to be accounted for. There may be a qualitative degeneration of an agent that does not follow of necessity from his original constitution, but, possibly, from the extent of his power. A physical force cannot make any aberration, but a force endowed with intelligence, capable of forming purposes and pursuing self-chosen ends, may neglect those rules of action which alone can guide it safely, and thus at last wholly miss the natural ends of its being. To such a being, eternal vigilance would be the price of liberty. Like a man walking on a narrow bridge, which might be passed in safety with constant care, the very extent of liberty might give opportunity for a fall.

7. Solicitation and Education.

Solicitation is an important factor in education, for education is the drawing out of the learner's powers through his own efforts. The spontaneous energies of a child impel him to action; but, if these are undirected, they result in a certain round of performances having few new or useful results. Nothing is so natural to a child as play, in which his surplus force tends to expend itself.

The business of a teacher is to aid in inducing him to put forth effort in a manner that will produce useful results. To accomplish this, motives must be presented. Rewards and punishments are, therefore, instituted. At first, these may be wholly physical; but, if higher motives are not supplied, when these are withdrawn, the learner is not prepared for liberty. The dangers of motives drawn from emulation have been pointed out (page 289). The noblest and most lasting motives to study are found in the hope of personal self-perfection. The development of one's powers is certainly a natural end of action, and it should be made the great motive in educational work. Even small boys are cheered and stimulated with the exhortation, "Be a little man, now!" To be a man, in the best sense, is the noblest motive at all ages of life.

In this section, on "Solicitation," we have considered:—

1. ***Definition of Solicitation.***
2. ***Motors and Motives Distinguished.***
3. ***The Origin of Motives.***
4. ***The Qualities of Motives.***
5. ***The Relation of Motives to Feeling.***
6. ***The Classification of Motives.***
7. ***Solicitation and Education.***

REFERENCE: (1) Edwards' *On the Will*, Part II., Section **10.**

SECTION II.

DELIBERATION.

1. The Field of Consciousness.

If we examine the contents of our minds at any moment of time, we find that there are many coëxistent elements in the field of consciousness. Whenever any end is contemplated by the mind as affording possible gratification, there are associated with it other elements of a different character. It is seldom that a single motive is presented to consciousness without the presence of others. This complexity of conscious states furnishes the conditions of deliberation.

The question has often been raised, **How many different objects can the mind simultaneously regard with distinctness?** Hamilton replies: "I find the problem stated and differently answered by different philosophers, and apparently without a knowledge of each other. By Charles Bonnet the mind is allowed to have a distinct notion of six objects at once; by Abraham Tucker the number is limited to four; while Destutt-Tracy again amplifies it to six. The opinion of the first and last philosophers appears to me correct. You can easily make the experiment for yourselves, but you must beware of grouping the objects into classes. If you throw a handful of marbles on the floor, you will find it difficult to view at once more than six, or seven at most, without confusion; but if you group them into twos, or threes, or fives, you can comprehend as many groups as you can units; because the mind considers these groups only as units,—it views them as wholes, and throws their parts out of consideration. You may perform the experiment also by an act of imagination."[1] It is a matter of small importance precisely how many distinct objects or ideas may be held before consciousness at once; the important fact is that our states of consciousness are com-

plex. In the case of the hypnotized subject (page 331), this complexity is reduced, by means of a fixed attention, to a simplicity of consciousness in which only one idea, that suggested by the operator, is present at a time. It is this that renders the person practically an automaton. But in the normal, waking consciousness many ideas are present at the same time. In certain highly emotional states, however, all ideas but one seem to be excluded from consciousness. This is the condition of a person wholly overcome with a comical idea, whose laughter then becomes involuntary and, for a time, uncontrollable. A man who has been grossly insulted is sometimes seized with a dominant idea, that of striking the person who has insulted him, his anger excluding, for the moment, every other idea. This condition is similar to that of a monomaniac, or victim of a fixed idea, and anger is often regarded as a kind of incipient insanity. If indulged in, it often leads to complete loss of mental balance. But the normal mental condition is one in which many ideas are present, and, hence, deliberation is possible. Jurisprudence takes account of the emotional condition of a culprit, and it is generally recognized that overpowering emotion interferes with deliberative power and so, to a certain extent, renders a man less master of himself and more of an automaton.

2. Attention.

Beyond dispute, the soul has the power of **attention,** or of concentrating its energies upon a single object or group of objects. This power is possessed in various degrees, according to the training the mind has received ; but all persons, except the idiotic and the deranged, possess it in some degree. When a motive is presented soliciting the soul to action of a particular kind for a particular end, the power of attention enables the soul to detain that motive and exclude other elements of consciousness from contemplation, or to concentrate its energies upon some other element of consciousness and thus escape the influence of that motive. If this were the only form of volun-

tary power possessed by the soul, it would be sufficient to insure, in some degree, its self-direction. This power seems incapable of further analysis, but is manifest in every rational consciousness.

Even such a physiologist as **Carpenter**, who lays much more stress on organic conditions than on the revelations of consciousness, strenuously **argues against automatism in the exercise of attention.** He says: "Reflection on our own mental experiences will satisfy us, that the variations in the relative strength of motives mainly arise from the degree of attention that we give to them respectively. An excited feeling which would soon die out if left to itself, will retain its potency, or even gain augmented force, if we allow ourselves to brood over it; whilst, on the other hand, the power of those remoter considerations which deliberation suggests, increases in proportion as they are dwelt upon. And just as, in the case of two magnets, we may reverse their relative attractions by changing their respective distances from the iron between them, so can each *Ego* who has acquired the power of directing his own course of thought and feeling, alter the relative potency of different sets of motives, by *determinately directing his attention* to those which would draw him in one direction, and by partially or completely excluding those of an opposite tendency from his mental view."[2] He then answers the objection, that the fixation of attention is really due to the superior strength of the motive itself, by saying: "No experience of which I am conscious is more real to me, than that if I did not *make an effort* to keep my attention fixed, the *desire* alone would fail to do it."[3] He here brings into notice, what each person can test for himself, that the act of voluntary attention involves a conscious effort of the soul. If this fact of consciousness be not accepted as decisive, then the psychological method is abandoned for the uncertain one of physical analogy; which, in turn, is worthless unless we accept the facts of consciousness which it offers.

3. Compound Attention.

In addition to the simple attention just described, we are capable of **compound attention**, or of attending alter-

nately to different objects and ideas. This enables us to carry on a process of deliberation by which we compare one motive with another in the field of consciousness. Thus, for example, a hungry man, seeing bread in a baker's window, is tempted to break the glass and steal a loaf of bread. The motive here is the prospect of satisfying his hunger. But the man is not a mere machine, impelled by a single force. He knows that, if he is caught, he will be punished as a thief. He knows, too, that this is a wrong act which he is considering and that his conscience will reprove him. Now he can fix his attention upon one of these restraining motives. The impulse to break the glass thus loses its power. The element of time is an important factor, for the longer he delays and deliberates, the more numerous will be the restraining motives which arise in his consciousness.

Even **Bain**, who finds most of his explanations in physiology, **admits this power of compound attention**, although,—as it seems without sufficient warrant,—he thinks its exercises must be confined to "rare instances." He says: "We can work ourselves up into a loving mood, by forcing the attention and the train of ideas upon all the kindness and affection that we may have experienced in the past. By a similar impulse of the Will, selecting, out of the current of intellectual reproduction, the catalogue of wrongs that have been inflicted on us, we succeed in warming up the glow of indignation. Dwelling in like manner on the catalogue of good actions and qualities, the self-complacent condition is nursed into being. So we can do something to turn aside a gush of feeling that has come over us, by diverting the attention from the exciting causes, and still more effectually by forcing the thoughts into the opposite channel, as when we silence a querulous fit by coercing the mind into the act of considering the favorable side of our situation. We do for ourselves what our friends, advisers, comforters, and the public preacher, or moralist, endeavor to do for us, that is, to present forcibly the thoughts, the facts, and the reflections bearing upon the temper

that we desire to put in the ascendant." [4] It is true that Bain considers this process "a hard one," as all of us who have attempted it (and who has not?) will confess. It is sufficient if it be possible.

4. Objects of Deliberation.

The act of deliberation is a complex one. There are three distinct objects that may be made matters of deliberation. These are as follows:

(1) We may deliberate concerning the **end** to be attained. Thus, there is a question which is better, to take the bread in the baker's window and suffer imprisonment and the pangs of conscience; or to do without this bread and have freedom and an approving conscience.

(2) We may also deliberate concerning the **means** to be employed in order to obtain bread. There are other means than stealing. Here a great variety of plans and projects may be suggested, each of which will occupy the attention.

(3) We may, finally, deliberate concerning the **time** when the effort decided upon shall be put forth, and thus a delay may arise giving opportunity for more deliberation.

We see by this analysis how far the human mind is removed from a machine impelled in a particular manner by an irresistible force. **In proportion as one deliberates, he removes his final action from the sphere of mechanical necessity.** The brute animal, not having the faculties for reflective thought, cannot deliberate as man can; having no faculty of general intuition, he cannot be restrained by a rule of rectitude or general principle. He is urged to action by his appetites and desires, immediate impulsions which meet with no restraint, except as restraint is artificially supplied by man. In the wild state, animals seem almost wholly under the dominion of their appetites and instincts. In a state of domestication, having received

some training from man, they are governed in part by the fear of punishment and, it may be, by affections which they acquire for their benefactors. But man rises into a wholly different sphere. He is influenced by considerations of abstract reason, by principles which have no material equivalents, but exist only for an intelligence that can discern them. All social judgment and judicial procedure are based upon man's possession of this higher nature. In so far as one can not deliberate, his act is extenuated. In so far as his act is the result of prolonged deliberation, it is unpardonable, if it is criminal. The killing of a man in a heat of passion, under great provocation, and the killing of a man with "malice aforethought," brooded over and deliberately planned, are acts very differently judged and punished by all human tribunals.

5. The Place of Judgment in Deliberation.

Deliberation involves a series of judgments. This removes the final determination of the course of action from the sphere of physical cause and effect. The original solicitation to act may have come from a physical cause, as the sight of the baker's bread in the eyes of a hungry man, and it may result in a physical act, as the breaking of the glass and the taking of the bread. But between the solicitation and the act lie a series of purely psychical actions. The chain of physical causes is, therefore, broken. An act of judgment is an intellectual act. It cannot be shown to have any physical correlative. But it is from this act of judgment, from the decision to steal the bread, that the act proceeds.

Judgment, in its various forms, is the most characteristic and universal act of our intellectual life. It is present in every intelligent operation and is the form in which all that we can call knowledge is presented to consciousness. "Judgment," says **Ladd**, "is a form of mental phenomena for the essential part of which no physical equivalent can be discovered or even conceived of."[5] When

judgments intervene between the presentation of motives and voluntary actions, and actions follow as a result of judgments, the circuit of sensori-motor action is broken and a new determination is introduced.

6. Suspension of Action.

When the purpose to perform an act has been formed, it is by no means necessary that it should be immediately executed. It may be delayed for a long period. This suspension of action admits of no physical explanation. If a judgment were of the nature of a motor, the moment it was formed the executive machinery would begin to execute the act, as the parts of a locomotive begin to move when the hand of the engineer turns on the steam. But such is not the case. Judgment indicates the volition that is, at the proper time, to be made, but judgment is not volition. A purpose lies dormant in the soul, awaiting its opportunity of realization. New motives come and go. Physical conditions wholly change. Can any one doubt that the persistence of a purpose is a psychical, not a physical determination?

The human soul is sometimes portrayed as the scene of a perpetual conflict, of which it is a passive witness, and whose events it simply records without power to modify them. How remote from the truth this representation is, every one knows who has examined his own mental experience. The formation of a purpose steadily kept before the mind in spite of all opposition, is a refutation of this ascription of pure passivity to the soul. It is true that, in many matters, we suffer ourselves to be the creatures of chance. It is easier to drift with the current than to oppose it, and we often prefer to submit to influences external to ourselves rather than to endure the strains and hardships of a struggle with opposing forces. A boatman in the current of a river may either steer his boat or drift. The fact that he is content to drift does not show that he cannot steer. Every man who has failed in accomplishing many of his

purposes in life well knows that this failure is owing to his weakness of purpose as well as to the resistance of circumstances. When the failure has relation to moral conduct, our consciousness assures us that the violation of moral law is not so much owing to the force of circumstances as to our own weakness.

7. Deliberation and Education.

The power to reflect is characteristic of the human mind and distinguishes it from the instinctive nature of brutes. And yet the teacher finds that there is in children a natural aversion to reflection. This leads us to consider (1) the cultivation of thoughtfulness, and (2) the relation of enlightenment and punishment.

(1) **The Cultivation of Thoughtfulness.**—It is perfectly natural for a healthy child to act impulsively. As we have seen (pages 20, 22), it would indicate a precocious self-consciousness if a child were very reflective. The conduct of a child is usually marked by thoughtlessness. The common excuse for wrong-doing is "I did not think." In so far as the psychical life is surrendered to thoughtlessness, it sinks into the sphere of the involuntary and impulsive. While this tendency is pardonable in children, because it is only by degrees that thoughtfulness can be developed, it is inexcusable in men. There comes a time to "put away childish things." The teacher aims at the cultivation of thoughtfulness, for this is necessary to the development of the voluntary as well as the intellectual powers. At last, thoughtfulness comes to be exacted, and to say, "I did not think," is to criminate one's self. When we speak of "reaching the years of responsibility," we mean that at a certain age thoughtfulness, having become possible, is also obligatory.

(2) **The relation of Enlightenment and Punishment.**— To punish one for what he does not understand, is to make all punishment unavailing. It simply terrifies and brutalizes. In order to render pain a deterrent, it must be presented as an alternative to some action, so that a choice is presented. Unless the alternatives are understood, there is no appeal to intelligence. The parent who at one time whips a child and at another laughs at him for the same act, neutralizes the punishment; for the child does not know when he will be punished and when he will not. Enlightenment should, therefore, always precede punishment. The impulse often is to punish an offender when the wrong act is done, regardless of his knowledge, and this is sometimes justified by saying that the child will know better next time. But if his act has proceeded from his ignorance and not from a wrong intention, the punishment is unnecessary and seems to the recipient unjust because he is conscious of no wrong. But when, after being told that a certain act will be punished, the act is performed and the punishment does not follow, the child's confidence in the veracity of its governor is weakened and government is destroyed. Exaggerated threats are seldom efficacious as deterrents, because the child knows they will not be executed. Mild punishments administered firmly are more efficient than the most terrific onslaughts without rule or certainty. The best government results from reasonable punishments which are known to be inevitable. Under such a system punishment of any kind is rarely necessary. The intelligence, appealed to and guided, soon becomes self-regulating.

In this section, on "Deliberation," we have considered:—

1. ***The Field of Consciousness.***
2. ***Attention.***
3. ***Compound Attention.***
4. ***Objects of Deliberation.***
5. ***The Place of Judgments in Deliberation.***
6. ***Suspension of Action.***
7. ***Deliberation and Education.***

REFERENCES: (1) Hamilton's *Lectures on Metaphysics*, pp. 176, 177. (2) Carpenter's *Mental Physiology*, p. 27. (3) *Id.* (4) Bain's *The Emotions and the Will*, pp. 378, 379. (5) Ladd's *Physiological Psychology*, p. 594.

SECTION III.

VOLITION.

1. The Nature of Volition.

Volition (from the Latin *velle*, to will) is a particular act of Will. In order to emphasize its difference from other experiences, we shall distinguish it from compulsion, desire and motive.

(1) **Volition is not compulsion.**—We are sometimes compelled to act in a particular manner. When this is the case, our action may be in opposition to our volition. Thus, a man is compelled by an officer of the law to go with him to prison. His volition is not to go. He goes under compulsion.

(2) **Volition is not desire.**—One may will to do that

which he does not desire to do. Thus, a child may not desire to work when he desires to play, yet he is willing to do so and opposes his volition to his strongest desire. It may be said that, in this case, the strongest desire, on the whole, prevails. It is difficult to answer this objection, because so much turns upon the meaning attributed to words. We can simply appeal to experience, which will convince us that we do often act in opposition to our strongest desire. We may also note that the general consciousness that has created the distinctions of words in current language attests the truth of this position; for, as Reid says, "I may *desire* meat or ease from pain; but to say that I *will* meat or ease from pain, is not English."[1] Volition relates only to an *act;* desire may relate to an *object.*

(3) **Volition is not motive.**—A motive, as we have seen, is the expectation of satisfaction as the result of action. This cannot be identified with the volition to act, for it is the *reason* of the volition. The identification of motives with volitions would involve us in the absurdity of holding that we have as many volitions as we have motives, which would result in plain contradiction.

If a motive be identified with an irresistible tendency, a desire be identified with such a tendency, and a volition, in turn, be identified with a desire, then, without doubt, every action is caused by motives. But how does this theory stand in the light of the facts of consciousness? A motive is not an irresistible tendency, an irresistible tendency is not a desire, and a desire is not a volition. In short, **it is impossible to identify a volition, or act of Will, with anything else.** It is an act *sui generis*, like an act of knowing. Whoever possesses Will and exercises it, knows what volition is; just as one who possesses Intellect and exercises it, knows what knowing is. Whoever has not these faculties cannot form an idea of these acts.

It is difficult to describe them in language, but it is still possible to show that language, properly employed, will not permit of denying or confounding them. For each of the different psychical states or acts represented by such words as "motive," "tendency," "desire," and "volition," we have a separate word which cannot be used interchangeably with the others. If a volition is simply a dominant desire, if that desire is an irresistible tendency, and if that tendency is the only kind of a motive of which we are capable,—have we not obliterated entirely the distinction between voluntary and involuntary action, and reduced all to a dead level of automatism? A true scientific procedure requires us, regardless of all theory, to discover, define, and express the distinctions made by consciousness.

2. The Forms of Volition.

Volition is always a particular act of Will, as knowing is always a particular act of Intellect; but, as we may distinguish between the forms of knowledge, so also we may distinguish between the forms of volition. We notice the following:

(1) **Attention.**—This is, probably, the most rudimentary form of volition. It lies at the basis of all voluntary power.

(2) **Assent.**—This is an act of Will with reference to a proposition. The truth of a proposition is determined by the Intellect, but the acceptance of it is a voluntary act. When doctrines and creeds are presented to the mind, they may be accepted or rejected, as well as examined and discussed. Sometimes the Will refuses to accept a proposition which the Intellect regards as true; and, on the other hand, the Intellect sometimes fails to grasp even the meaning of a proposition which the Will accepts. As an example of the first, take the case of a person who is convinced that he ought to perform a particular duty, but will not perform it; as an example of the second, take

the case of a devout believer who assents to a creed without being able to comprehend it.

(3) **Choice.**—When two ends of action are proposed, we may choose between them. A machine cannot choose. A man impelled by one irresistible tendency cannot choose. But, given two motives, one may accept the one and reject the other as a ground or reason of action. But there cannot be choice without at least two motives. It is, therefore, true that no man acts voluntarily without a motive. But motives are not the causes of voluntary action. They are simply indispensable conditions. If we are asked why we finally choose one course of action rather than another, we can only answer, that such was our volition in the light of our estimate of the alternatives. The cause of the choice is ourselves. Whenever a constraining factor appears our action ceases to be voluntary.

(4) **Execution.**—Attention, assent and choice are purely psychical acts. We have in addition the power to carry out our volitions in the sphere of physical motion. This is sometimes called **executive volition.** It is not a purely psychical, but a psycho-physical, operation. How the volition becomes translated into motion when we will to raise an arm, is as completely unknown to us as how a sense-impression is transformed into a perception. We can only say that there is provision in our psycho-physical constitution for the execution of volitions through the bodily organism. In performing such an act as raising an arm, we have no consciousness of the nervous and muscular apparatus by which the volition is executed. We simply fix the mind upon the idea of the act, will it to take place, and it happens. That the idea of the action in some way reacts upon the organism is highly probable,

for we have already seen that Phantasy can reinstate certain bodily conditions (page 90), that qualitative states of consciousness may produce quantitative effects in the organism (page 263), and that ideo-motor action may take place involuntarily (page 314).

The relation of volition to physical causation presents a problem of the greatest difficulty. The difficulty, however, grows out of our ignorance of physical force and its relations to its effects quite as much as it does out of anything mysterious in the nature of volition. We know much of the conditions under which physical effects follow physical causes, but we know little or nothing about physical causes themselves. One set of phenomena, like the movements which produce friction, will produce another set, as those of heat; and heat, at a certain degree of temperature, will produce combustion; but there is much in these superficially common-place phenomena which no science can penetrate. The facts of volition and of consequences following volition are undeniable. We know as much of their connection as we do of the connection of a physical cause and its effect, that is, that they are related in the order of cause and effect, but no more. We here come face to face with the deepest mystery of our experience—the ultimate nature of force. But there is nothing in the constitution of our minds or in our experiences that leads us to doubt that a causal connection exists between volition and bodily action; while, at the same time, there is nothing within the range of our knowledge that requires us to believe that a volition either increases or diminishes the quantity of physical force in the body. Volition is qualitative, not quantitative. We cannot, by willing, add one cubit to the body, or make one hair black or white, but we can determine the *kind* of actions we will perform with the forces at our disposal. We find ourselves in possession of a marvellously adjusted and delicately poised mechanism which is, in health, obedient to our volitions. We find ourselves capable of attending, assenting, choosing, and executing, within certain limits, without constraint. We find and declare ourselves to be such beings. The facts are not in the least dependent upon any theory of physical forces. If it is proposed to reduce our volitions to terms of physical force, there lies before those who attempt this

explanation the mastery, first, of a theory of the nature of physical force which physicists will accept as satisfactory; and, second, of a method of showing how the phenomena of which we are conscious can be expressed in such terms. The present theory of the correlation and conservation of forces offers little hope of success; for the volitions of a Napoleon, for example, which changed the face of Europe, are wholly incommensurable with foot-pounds of force. If it be objected that the conscious soul cannot originate more than is concentrated into it by physical forces, as present in food and air, it may be asked how motion can anywhere originate, since it must be retraced to something else, and how it can ever change its direction, since nothing can act except as moved upon from without? Whence it results, either that everything has eternally been what it now is, or that a Power above nature has caused things to be as they are by supplying an external impulse. If the former alternative be accepted, an unchanged course of nature is eternal. If the latter be accepted, it may be held that this Power has bestowed upon us a power of affecting the physical order by a reaction of intelligence upon mechanism, similar to that which has coördinated the physical forces according to a plan which binds matter to the service of mind.

3. Liberty and Necessity.

The words "**Liberty**" and "**Necessity**" have been employed to designate two opposite views of the nature of Volition. Both words are used in a number of different senses. In the *physical* sense, every occurrence is necessary. In the *intellectual* sense, certain judgments follow necessarily from other judgments under the laws of thought, although we by no means necessarily observe these laws in our thinking. In the *moral* sense, there is also a kind of necessity, as when we regard punishment as morally necessary in human society. It is obvious that the word "necessity" has at least three different meanings. The controversy concerning the "**Freedom of the Will**" has been, to a great extent, a dispute about words.

We shall simply state these theories and attempt to point out the truth there is in each.

(1) **The Theory of Liberty.**—If we meant nothing by the word "liberty," there could be no intelligible discussion about it. The proper meaning of the word is "freedom from compulsion." Some of our actions are "free" in the sense that we choose the ends to be attained and the means for attaining the ends, without restraint. That we do so, is evident from the following considerations: (*a*) We distinguish between voluntary and involuntary actions; (*b*) we are conscious when acting that we choose without restraint; (*c*) we feel an obligation to perform some actions and to avoid others; (*d*) we experience ethical emotions in view of our own actions and the actions of others; (*e*) all administration of justice assumes in men the power to act freely and adapts punishment to the apparent degree of freedom; (*f*) all languages contain words representing the ideas of "choice," "freedom," "guilt," "innocence," etc. We are, then, in some sense, conscious of liberty. Some extremists have held that we can and do act without motives, and that volitions are uncaused acts. It is this extreme position, or what has been mistaken for it, that those who hold the opposite view have usually attacked.

(2) **The Theory of Necessity.**—We must admit the reality of some kind of necessity, or there could be no discussion. The proper meaning of "necessity" is "absolute compulsion." Given a physical force acting without interference, the effect must of necessity follow. This is practically undisputed, although it is theoretically doubtful if we accept the idea of cause advocated by Hume and his followers (page 185). But the question here relates to

the necessity of volitions. Given a particular volition, can we say that it proceeds from absolute compulsion? The Necessitarian gives an affirmative answer. His reasons are: (*a*) Every event follows necessarily from its cause; (*b*) a volition is an event which can be traced back to its determining causes; (*c*) the activities of the mind are all events which are caused the same as other events. Here a difference must be noted. Some Necessitarians admit none but physical causes and regard every mental event as produced by physical causes. Others admit a difference between physical and psychical activities, but regard every event as determined with equal necessity by its causes.

If we adhere to the psychological method, **we must abide by the decision of consciousness.** In the act of choice, we are conscious of being able to choose without compulsion either of the alternatives presented. We cannot say, therefore, that our choice is a necessary one. We cannot say, on the other hand, that our determination is uncaused. **We are conscious of being the determining cause.** We are conscious of freedom at the time of acting, and it is in the light of this consciousness that we admit our responsibility.

The history of this controversy is long and complicated, having a theological as well as a philosophical bearing. The controversy is, however, much more theoretical than practical; for, whatever conclusions we adopt, we must practically assume moral freedom in all our personal conduct and judgments of others. If we were to assume that whatever is destined to happen, will happen, without regard to our actions,—the absurdity of the assumption would soon become manifest in the practical consequences. We should put forth no exertions toward any end, we should blame no one for his conduct whatever it might be, and we could not logically resent

any indignity or apparent injustice that might be visited upon ourselves, for our assumption would require us to confess that *all was necessary!* Unless consciousness be admitted as a final and decisive arbiter, the discussion of the question would be endless, for we could find no positive evidence upon the subject outside of the consciousness of men. The moment we appeal to the analogies of physical nature, we transfer the subject to another sphere of relations and really involve ourselves in a *petitio principii;* for we thereby assume that the laws of the physical world are, without modification, universal in the psychical sphere. But, having thus abandoned the veracity of consciousness, we should fall into the skepticism of Sensationalism, after the manner of Hume, and losing the rational intuition of universal causation, we should end our discussion with a *non sequitur.* The moment we exclude all evidence except that furnished by the senses, we lose the rational principle of cause altogether; and, as we have seen (page 189), are unable to show that any event stands in the relation of cause and effect to any other. Those who desire to inform themselves of the history of the free-will controversy, will find accounts in the encyclopedias and statements from the theological point of view in the works on systematic theology. Many modern Necessitarians prefer to call themselves Determinists and their doctrine **Determinism.** Mill, Bain, and Spencer may be regarded as the leading modern advocates of necessity, although it has been taught by many theologians, of whom Edwards is the chief. The doctrine of **Libertarianism** is held, with variations and modifications of statement, by Reid, Hamilton, and the majority of those who have followed them in philosophy. A long line of special treatises has appeared in America in favor of the freedom of the Will. The most distinguished of these writers are Day, Tappan, Upham, Bledsoe, Whedon, and Hazard. Their works are generally accessible, and should be examined by those who are interested in this subject.

4. Volition and Education.

While it is clear that volition is not caused by motives in any mechanical manner, it is equally evident that we do not act voluntarily without motives. There are, then,

two important points of interest for the educator in relation to volition: (1) the presentation of motives, and (2) the sphere of freedom.

(1) **The Presentation of Motives.**—We can elicit action only by offering suitable motives. If the motive presented be relatively insignificant, or relatively dominant, there is little opportunity for voluntary action; for an insignificant motive is not seriously taken into account, and a dominant motive is permitted to decide a question without deliberation. When a child, for example, is required to choose between studying a quarter of an hour during the school period and remaining an hour after school, there is, properly speaking, no opportunity for choice. It is simply a question of more or less, and intuition shows that a part of an hour is less than a whole. Will is developed only by exercise, and its exercise requires the presentation of motives of different kinds. In so far as it is the purpose of a parent or teacher to encourage the development of voluntary power, which is the essential element in that self-government for which education is a preparation, the opportunities for a real choice must be furnished.

(2) **The Sphere of Freedom.**—The greatest mistake in the moral training of children is to suppose that mere obedience is the end of government. Obedience to parental or tutorial authority may be perfect, but if it is produced by personal fear alone, the moment this fear is removed the government is abolished. It is true that habit counts for something, but when the fear upon which a habit has been based is removed, an opposite habit is likely to be formed as soon as personal freedom is secured. It is notorious that children most rigidly trained, when free from authority, are wholly incapable of self-direction and

rush into the opposite extremes. The reason is, that they are wholly unprepared for freedom. They can never be prepared for it except by the moderate enjoyment of it, as the eye can never be prepared in darkness for the light, but must be gradually adapted to it. It is in the sphere of freedom alone that self-regulation can be cultivated. This does not warrant great laxity, but it requires a certain freedom of action in which one is allowed to choose for himself and is held responsible for his choice by submitting to the consequences. That this sphere of freedom must be restricted, is evident from the fatal results which would follow if children were left to natural consequences alone. It would be simply criminal to permit a child to experiment with poison. And yet a *limited* freedom is essential to the exercise and growth of voluntary power.

In this section, on "Volition," we have considered:

1. ***The Nature of Volition.***
2. ***The Forms of Volition.***
3. ***Liberty and Necessity.***
4. ***Volition and Education.***

REFERENCE: (1) Reid's *Works*, II., p. 532.

SECTION IV.

THE DEVELOPMENT OF WILL.

1. Summary of Results.

In examining the modes of activity of which we are capable, we have distinguished two main classes of actions, the involuntary and the voluntary. We have found that

Will cannot be identified with knowledge, or with feeling, or with a mere union of them. It is a power of the soul to direct its own activity toward ends of its own choosing. Intellect, Sensibility, and Will are not three separate beings, but faculties possessed by **one being in whose self-conscious unity these powers cooperate.**

We may summarize actions as follows:

Actions are:
- I. Involuntary, in the form of
  1. Reflex Actions,
  2. Sensori-motor Actions, and
  3. Ideo-motor Actions; all being either (1) instinctive, or (2) acquired.
- II. Voluntary, in the form of
  1. Attention,
  2. Assent,
  3. Choice,
  4. Execution.

2. The Stages of Volition.

The four forms of volition represent successive stages of voluntary action. Attention is the most simple and rudimentary. Assent accompanies a proposition. Choice occurs when alternatives are presented. Execution is the realization of an ideal state in physical movement. These forms of voluntary action are possible only through the coöperation of knowledge and feeling, but cannot be reduced to them either separately or unitedly.

To those who do not make a careful analysis of experience, volition may seem to be identical with a union of knowledge and feeling; but a careful analysis renders the distinction clear. Purely involuntary actions, as, for example, the act of winking, may be both known and felt, *without volition*. When the same act is performed voluntarily, there is an additional element in the experience —the volition to perform the act. It is this additional factor which renders Will irreducible to a mere union of knowledge and feeling.

3. The Development of Will.

The power of self-direction is evidently capable of development. Our experience exhibits a gradual extension of voluntary control over activities which were at first not under the dominion of Will. This growth of voluntary power must not, however, be confused with a development of Will out of something which is not Will. The involuntary can never by mere complication become voluntary. Some psychologists have attempted to derive Will from mere reflex action.[1] However refined and complex a system of physical forces may be, its action does not cease to be mechanical. All who have attempted to evolve the voluntary from the involuntary, have ended, with logical consistency, in automatism. Will, like Intellect and Sensibility, is a primary and underived faculty. It can be developed only by exercise. Whoever does not exercise his self-directing power soon degenerates into the mere creature of circumstances and is swept along like a vessel without a helmsman.

The difficulty in deriving voluntary action from involuntary, or of tracing the development of Will from reflex action, has been well stated by **Wundt.** He says: "If Will did not exist already, it would be incapable of choosing any movement whatever among the pre-existing involuntary movements."[2] Involuntary action might go on increasing in complication, but it would never become voluntary. The distinction between voluntary and involuntary would, therefore, never arise. But, if there are no voluntary actions, it would be as well to deny their existence without taking the trouble to explain their development. **Bain** candidly admits that, "without spontaneity the growth of the Will is inexplicable."[3] But nothing is gained here, for he soon refers this "spontaneity" to "nutrition," "convulsions, spasms, and unnatural excitement of the active energy

in the nerve centres."[4] To explain the genesis of Will by referring the first voluntary movements to nutrition and incipient epilepsy would be grimly humorous, if the attempt did not claim to be scientific. The ineptness of the endeavor is well pointed out by one who is quite in sympathy with Bain's purpose, but who cannot accept his explanation. "Nerve-force," says **Ribot**, "can be only the transformation of some prior physical force. The inequality of its distribution over the body must also depend on physical or mechanical causes. Hence, we do not see what becomes of this 'spontaneity,' acted on as it is on all sides by mechanical laws."[5] The problem is here confessed by all, but it is not solved. Will exists, and it cannot be derived from anything that is not Will. We are compelled to admit the presence of what Wundt calls "the personal factor."

4. Habitual Volition.

Volitions many times repeated, even when they do not lose their voluntary quality, become progressively easier, and tend at last to become habitual. It is for this reason that the wise man warns the young against first steps in wrong directions. Our freedom, unless constantly guarded, is easily lost. Habitual volitions, like habitual feelings, consolidate into **moral character**, which is measured and classified according to the standards of Moral Law.

We see in this connection how the soul, naturally endowed with freedom, may by voluntary acts put itself in bondage. This servitude, voluntary at first, may become necessary at last. It is because of this unquestioned limitation of freedom in every established character that the degree of liberty in any particular case and with reference to any particular act becomes a matter of uncertainty and dispute. If we choose to magnify this undeniable subjection of the soul to modes of activity not at first necessary and to exclude from view the evidences of remaining freedom, it is possible to convince ourselves that we are, at any moment, to a great extent, the

creatures of our own past. But this does not release us from responsibility for what we have made ourselves and even more clearly for what we are making ourselves to-day.

5. The Inheritance of Will.

That Will is inherited admits of no doubt, for as a primitive faculty of the soul it is essential to the completeness of our psychical being. Whether or not Will as inherited contains any particular determination to act in a special manner, is another question. Some attempt has been made to show from the facts of history that "strong" and "weak" Wills are capable of transmission by inheritance.[6] The evidence is certainly not very conclusive. That susceptibility to certain motives is inherited, is more clear. The accumulations of fact are too small to justify a generalization, and there would be great difficulties in the interpretation of any amount of such evidence, however large it might be.

Wundt says: "When it is asserted that the character of man is a product of air and light, of education and destiny, of food and climate, and that it is necessarily predetermined by these influences, like every natural phenomenon, the conclusion is absolutely undemonstrable. Education and destiny presuppose a character which determines them; that is here taken to be an effect which is partly a cause. But the facts of psychical heredity make it very highly probable that, could we reach the initial point of the individual life, we should there find an independent germ of personality which cannot be determined from without, inasmuch as it precedes all external determination."[7] Whatever may be the extent of inherited tendency, responsibility relates to our volitions. Inherited tendencies beyond the control of the Will show how responsibility rests upon the past as well as upon the present generation, and links the present to the future with an obligation that may not be lightly disregarded.

6. The Law of Voluntary Action.

That a being of such capacities as man possesses should be without a law for his voluntary activities, is not in analogy with the universality of law in nature. The law for the Will is the **Moral Law.** The moral nature of man is the subject of which Ethics is the science. Psychology shows that man has an Intellect capable of apprehending a general rule of conduct; that his Sensibility affords ethical emotions, which vary in kind according as this rule is or is not obeyed; and that he possesses Will, the faculty of self-direction which enables him to observe this rule. The way in which Moral Law is known, and the rights and duties that arise from the knowledge of it, are questions belonging to the science of Ethics. Psychology completes its special investigation in stating the fact that the soul is a moral agent, capable of knowing and obeying Moral Law, to which the harmony of its nature requires that the Will should be subjected.

The order of nature culminates in man, and nature, through the wonderfully adjusted mechanism of man's nervous system, is under the dominion of Will. So far as a purpose is discernible in the constitution of nature and of man, that purpose is realized in man's fulfillment of his destiny as a moral being. Freedom is the essential condition of moral character. Obedience to moral law is the condition of a perfected personality. The soul, therefore, finds its meaning in this conformity to the creative purpose. The true dignity of human nature does not consist in the mere possession of superior power, but in the conformity of all the faculties to the Divine plan. As Reid has said: "As far as the intention of nature appears in the constitution of man, we ought to comply with that intention, and to act agreeably to it."[8] If the creative purpose has been expressed not only in nature, but by a special revelation, then we ought to act agreeably to that also and for the same reason.

7. The Immortality of the Soul.

The questions of origin and destiny both lie beyond the limits of direct observation and, therefore, beyond the sphere of exact science. The mode of the soul's beginning is as mysterious as the mode of its future existence. The Power that gave us being can give us also immortality. Man's earthly life seems to be an unfinished life. Endowed with reason, man is the interpreter of nature; capable of moral obligation and ethical emotions, he is a subject of moral government; gifted with freedom, he is capable of a moral character that distinguishes him from inferior creatures. The latest to appear in the series of living beings on the earth, the only imaginable fulfillment of rational purpose in geological history, it is most natural that nature's interpreter should find nature's interpretation in his own immortal life.

Although the questions of origin and destiny lie beyond the scope of science, the interest attaching to the soul's future may warrant some attempt to point out the limits of our natural knowledge. The relation between soul and body is one of coëxistence, not of identity. In the processes of knowing, feeling, and acting the soul is dependent upon the body for its communication with the world of sense-impressions. Still, as **Bowne** has said, "When once a mental life has begun, and a store of ideas has been accumulated, it seems quite possible that a self-enclosed thought-life might continue thereafter in entire independence of any organism. No necessity for an organism appears, except for communication with the outer world."[9]. "The abstract possibility of our existing apart from the body admits of no dispute; but this is far enough from proving that we shall so exist. Yet the fact that the soul cannot be identified with the body shows that the destruction of the body contains no assignable ground for the destruction of the soul. . . . Every real thing must be assumed to continue in existence until its annihilation has been

proved. If, then, this subject is to be argued upon the basis of our customary ideas, the burden of proof would lie altogether upon the believer in annihilation; for the soul is real, and must be assumed to exist until its destruction has been shown. Of course such a showing is impossible; and hence the presumption must remain in favor of continued existence."[10] If any difficulty arises from the apparent necessity of ascribing immortality to the souls of brutes, it should be considered that the probability of immortality is not argued from the soul's existence, but from its adaptation to immortal life. The brute knows nothing of the meaning of nature, of moral law, or of a creative plan. Reason demands that whatever is necessary to the completion of a plan may be rationally expected. Moral excellence seems to present a claim to continued being, and everything else seems not an end but a means. If brutes possess no moral value, there is no reason why they should share with rational creatures in immortal life.

In this section, on "The Development of Will," we have considered:—

1. ***Summary of Results.***
2. ***The Stages of Volition.***
3. ***The Development of Will.***
4. ***Habitual Volition.***
5. ***The Inheritance of Will.***
6. ***The Law of Voluntary Action.***
7. ***The Immortality of the Soul.***

REFERENCES: (1) See Spencer's *Principles of Psychology*, I., Part IV., Chapter IX. (2) Wundt's *Physiological Psychology* (not translated into English), Chapter XX. (3) Bain's *The Senses and the Intellect*, p. 70. (4) *Id.*, p. 73. (5) Ribot's *Heredity*, p. 341. (6) *Id.*, Part I., Chapter VII. (7) Wundt's *Lectures on the Human and Animal Soul* (not translated), II., p. 416. (8) Reid's *Works*, II., p. 638. (9) Bowne's *Introduction to Psychological Theory*, p. 315. (10) *Id.*, p. 316.

ILLUSTRATIVE FIGURES

FIG. 1.

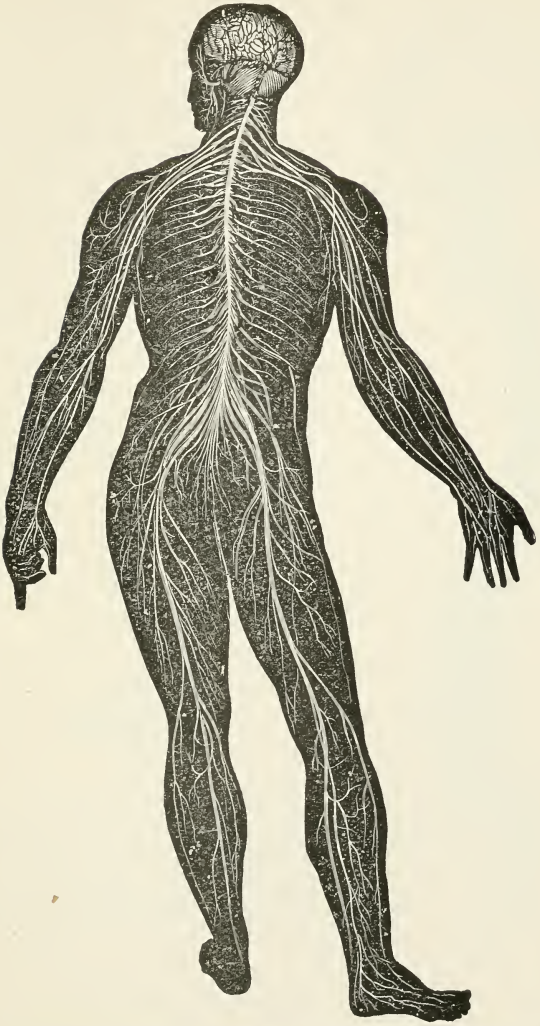

FIG. 1.—Diagram illustrating the general arrangement of the nervous system.

FIG. 2.

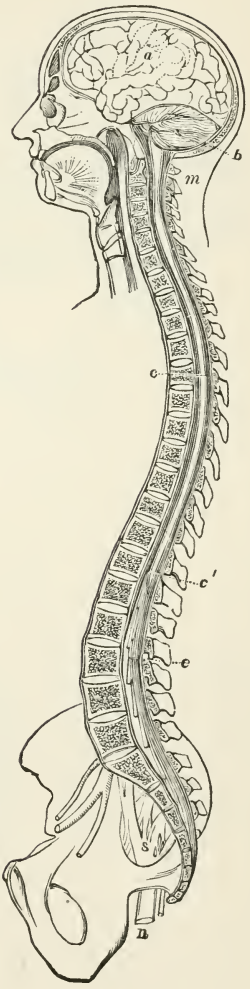

FIG. 2.—**A vertical median section through the cavity of the skull and the spinal canal**, to show the way in which the **brain** and its prolongation, the **spinal cord**, are lodged within the bony axis of the body. *a* is the **cerebrum**, or brain proper; *b* the **cerebellum**, or little brain; *m* the **medulla oblongata**; *c* the **spinal canal**; *c'* the lower end of the **spinal cord**; *e* the roots of the lumbar or sacral nerves, forming the cauda equina, or so-called horse's-tail; *s* the sacral plexus of nerves, and *n* the great sciatic nerve. This cut also shows sections of the bodies and rings of all the **vertebræ**; and of the **nose, mouth, throat, gullet, tongue, larynx**, and **windpipe**. The brain and spinal cord are protected from the bones by the dura mater, by two layers of the arachnoid, and by the inner membrane, or pia mater. (Bourgery.)

FIG. 3.

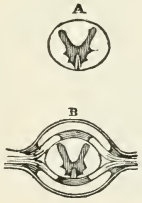

FIG. 3.—**A, a transverse section through the cord**, to show the form of the grey cornua, or horns, in the midst of the white substance. B, shows the same parts; and also the **membranes of the cord**, and the anterior and posterior roots of a pair of spinal nerves springing from its sides.

FIG. 4.

FIG. 4.—General View of the Cerebrum. 1. The integuments of the head turned down. 2, 2. The edge of the remaining part of the cranium, the upper having been removed. 3. The dura mater. 4. The convolutions and anfractuosities of the brain.

FIG. 5.

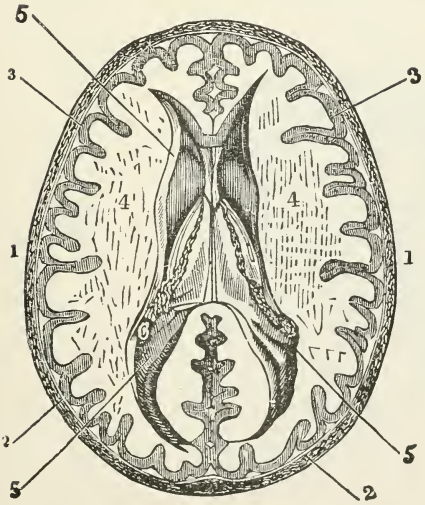

FIG. 5.—A horizontal section of the Cranium and Cerebrum. 1, 1. The cranium. 2, 2. The dura mater. 3, 3. The cellular substance of the cerebrum. 4, 4. The tubular substance. 5, 5. The lateral ventricles of the brain.

FIG. 6.

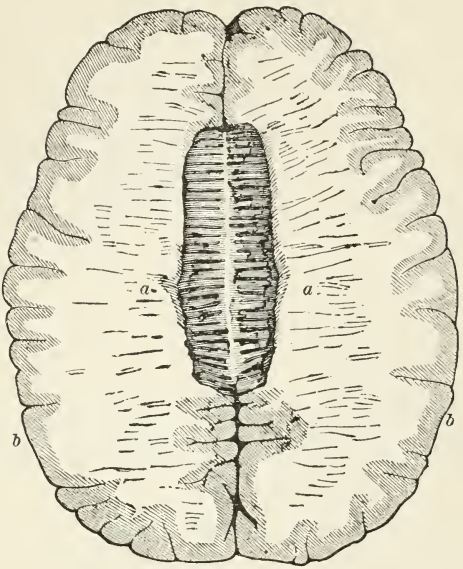

FIG. 6.—Horizontal section through the cerebrum, to show the mode in which the two **hemispheres**, *a*, *a*, are joined together by the transverse band of white substance, named the **corpus callosum.** In front and behind this, the longitudinal fissure separates the two hemispheres. *b*, *b* is the section of the cortical substance; *a*, *a*, of the medullary. The section also shows the depth of the sulci, between the convolutions.

FIG. 7.

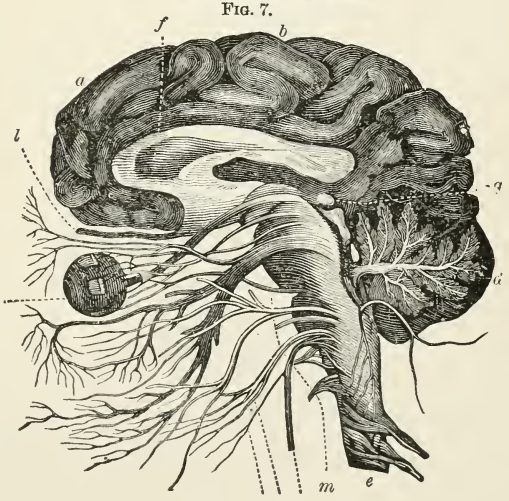

FIG. 7.—Vertical section of the brain, showing its three lobes; *a*, the anterior; *b*, the middle; and *c*, the posterior. At *f* is the broad band of white fibrous matter, or corpus callosum, which unites the two halves or hemispheres, of course divided in the section; at *d* is the cerebellum, showing a peculiar arrangement, called the *arbor vitæ*, or tree of life; at *g* is the beginning of the optic nerve which goes to the eye; *l* is the olfactory nerve; *e* is the commencement of the spinal marrow; *m* is the medulla oblongata.

FIG. 8, A.

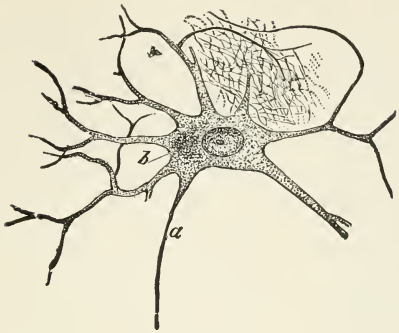

FIG. 8, A.—Nerve-cell from anterior horn of spinal cord (*man*), *magnified* 150 *diameters*. *a*, cell-process unbranched passing into or joining an axis cylinder, the other processes are branched; *b*, pigment. The nucleus and nucleolus are visible.

FIG. 8, B.

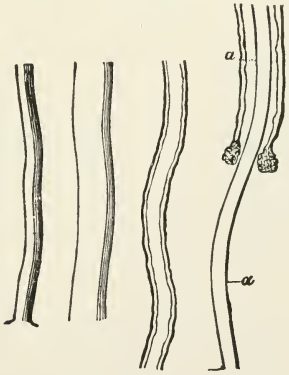

FIG. 8, B.—Nerve-fibres. *a*, *a*, the axis-cylinder, still partially surrounded by the medullary sheath.

Nerve-cells vary from $\frac{1}{250}$ to $\frac{1}{3500}$ of an inch; nerve-fibres from $\frac{1}{1200}$ to $\frac{1}{14000}$ of an inch, in diameter.

Fig. 9.

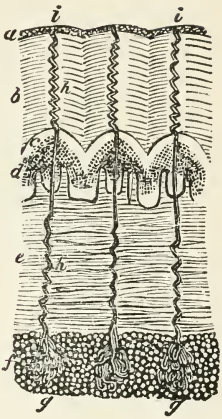

Fig. 9.—Vertical section of a portion of the skin of the finger, made across three of the curved ridges, magnified about 14 diameters; *b*, Section of the dry part of the **epidermis**. *d*, Section of the soft, mucous, or Malpighian **rete mucosum**, the chief seat of the coloring matter in the dark races. *e*, Section of the **cutis** or derma, gradually becoming more areolar, until it joins the subcutaneous areolar adipose tissue. *c*, Elevations of the upper compact portion of the cutis, named the **papillæ**, placed in rows across the ridges just mentioned. *g*, Coiled **tubuli** of the sudoriferous, or sweat glands, lying near or in the areolar subcutaneous tissue. *h*, Long duct of one of these glands, forming a waved line through the cutis, *e*, but passing spirally, like a corkscrew, through the cuticle, *b*, and then opening on the surface of a ridge. *f*, Small masses of the subcutaneous fat. (Kölliker.)

Fig. 10

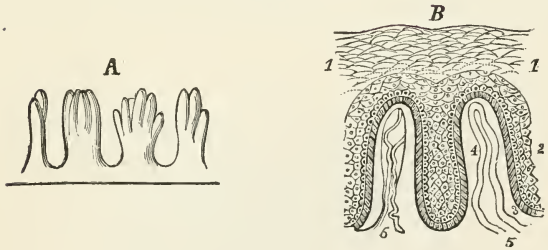

Fig. 10.—*A*, a larger view of the cutaneous papillæ, showing the secondary papillæ into which they are often divided. Magnified about 60 diameters. *B*, still larger diagrammatic view of two simple **cutaneous papillæ**, with their epidermic covering. 1, dry scaly part of **epidermis**. 2, soft part, or **rete mucosum**, consisting of compressed cells. 3, **cutis**, or true skin. 4, **papilla**. 5, vascular capillary loop in one papilla. 6, **tactile corpuscle**, with two nerve-fibres winding up, and becoming lost upon it. (Kölliker.)

FIG. 11.

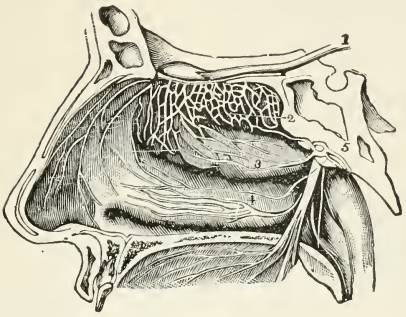

FIG. 11.—**Vertical section through the right nasal fossa,** showing the outer side of that fossa, with a part of the base of the cranium, the palate, and the nose. 1, the **olfactory tract** ending anteriorly in the olfactory lobe, or bulb, resting on the cribriform plate of the ethmoid bone. 2, superior turbinated portion of the **ethmoid bone,** corresponding with the upper part of the olfactory region, and covered with the network of the branches of the **olfactory nerves.** 3, middle turbinated portion of the ethmoid bone, covered with a few olfactory nerves, and also forming part of the olfactory region. 4, lower turbinated bone, receiving only branches of the fifth nerve, 5, which also supplies the palate. The anterior region of the nasal fossa receives branches also derived from the fifth nerve. (Arnold.)

FIG. 12.

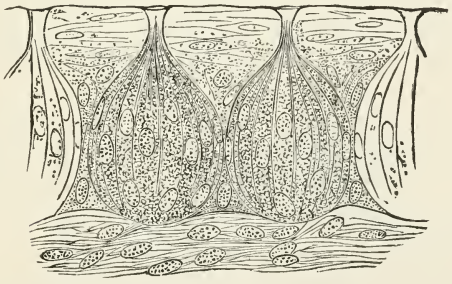

FIG. 12.—**Taste-buds.** Magnified 450 times.

FIG. 13.

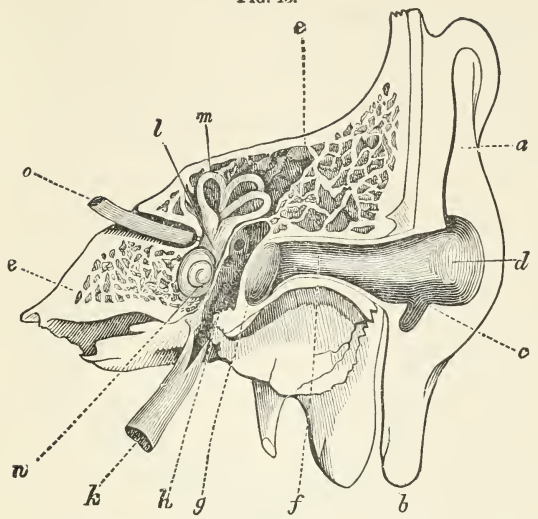

FIG. 13.—**The Ear.**—The internal portions are made rather larger than natural, in order that the construction of the ear may be clearer. At *a b c* is the **external ear**; at *d* is the entrance to the tube of the ear, *f*; *g* is the drum of the ear at the end of this tube, called the membrane of the **tympanum**; *h* is the cavity of the tympanum, the chain of bones which it contains being left out, so that the plan of the apparatus may be more clear to you; *k* is the **Eustachian tube**, which makes a communication between the back of the throat and the cavity of the tympanum; *n* is a part of the winding passages, shaped like a snail's shell, and therefore called the **cochlea**; at *m* are three other winding passages, called, from their form, **semicircular canals**; and at *l* is the **vestibule**, or common hall of entrance to all these winding passages; *o* is the **auditory nerve**.

FIG. 14.

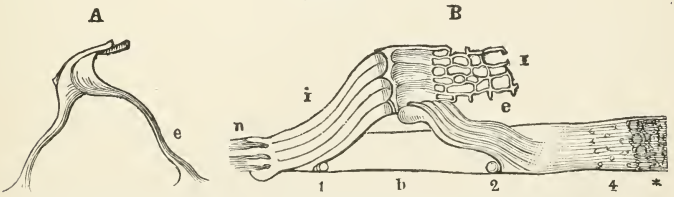

FIG. 14.—**The rods of Corti.**—*A*, a pair of rods separated from the rest; *B*, a bit of the basilar membrane with several rods on it, showing how they cover in the **tunnel of Corti**; *i*, inner, and *e*, outer rods; *b*, basilar membrane. Magnified 360 times.

FIG. 15.

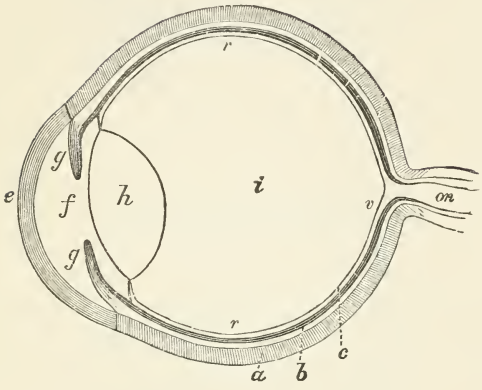

FIG. 15.—Eyeball in horizontal section.—*g*, iris; *f*, pupil; *h*, lens; *i*, vitreous humor; *r*, retina; *on*, optic nerve; *v*, fovea centralis, or point of greatest visual sensibility. *a*, *b* and *c* are three points where images are formed. When *v* is moved to obtain clearer vision *va*, *vb* and *vc* afford "local signs," as explained on page 59.

Fig. 16.

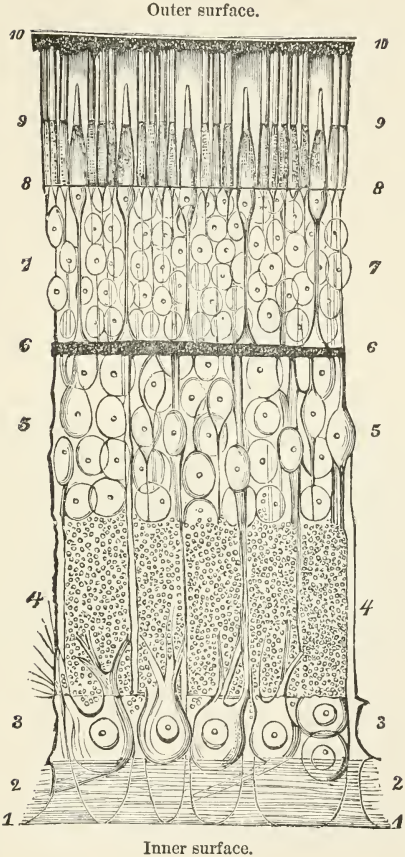

Fig. 16.—A section through the retina from its anterior or inner surface, 1, in contact with the hyaloid membrane, to its outer, 10, in contact with the choroid. 1, internal limiting membrane; 2, nerve fibre layer; 3, nerve-cell layer; 4, inner molecular layer; 5, inner granular layer; 6, outer molecular layer; 7, outer granular layer; 8, external limiting membrane; 9, rod and cone layer; 10, pigment-cell layer. (Schultze.) The rods are about $\frac{1}{350}$ inch in length, the cones are shorter. The diameter of the rods is about $\frac{1}{14000}$ inch.

FIG. 17.

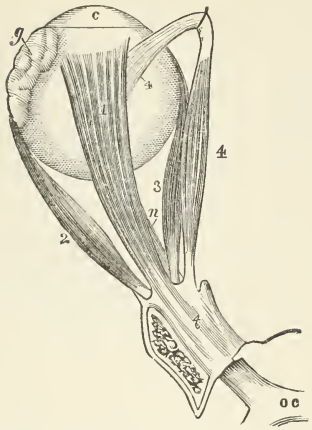

FIG. 17.—**Left eyeball, seen from above,** with a portion of the bone at the bottom of the orbit, the left optic nerve, and the optic commissure, showing some of the ocular muscles. 1, superior rectus muscle. 2, external rectus muscle. 3, internal rectus muscle. 4, 4, superior oblique muscle, passing through the trochlea or pulley, by which the direction of its tendon is changed, before it is inserted into the eyeball. *t*, common tendinous origin of the ocular muscles, surrounding the optic foramen, at the bottom of the orbit. *g*, the lachrymal gland. *c*, the transparent coat of the eyeball, or cornea. The rest of the eyeball is covered by the sclerotic. *o c*, the **optic commissure**. *n*, the left **optic nerve** passing obliquely forwards, in the axis of the orbit, to reach the eyeball. The antero-posterior axis of the eyeball, when at rest, is not oblique, but is directed forward, the axes of the two eyeballs being then parallel.

FIG. 18.

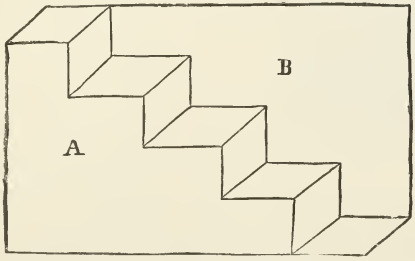

FIG. 18.—By an act of Will, either *A* or *B* may be brought into the foreground. *A* being forward, we see the *tops*, *B* being forward, the *bottoms*, of a flight of steps.

Fig. 19.

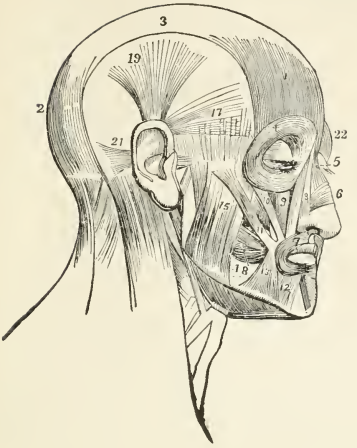

Fig. 19.—The Muscles of Emotive Expression.—1, 2, 3 lift the skin of the forehead; 4 closes and opens the eye; 5, pyramidal muscle of the nose; 7, orbicularis oris, used in closing the mouth and in pouting; 8, 9, levatores labii; 10, 11, zygomatics; 12, quadratus menti; 13, depressor anguli oris; 15, used in chewing; 17, 19, 21, muscles moving the ear; 22, corrugator supercilii.

Fig. 20.

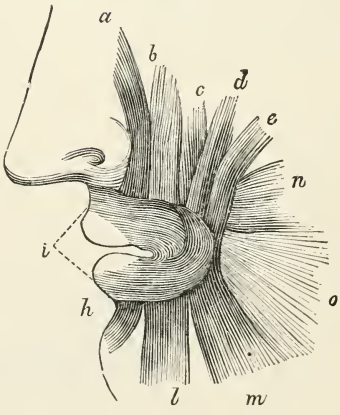

Fig. 20. — Muscles of the Mouth.—At *a* is the muscle which draws up the wing of the nose and the lip; *b* raises the lip; *c* raises the corner of the mouth; *d* and *e* raise the corner of the mouth, and at the same time carry it outward; *n* draws it outward; *m* draws it downward and outward, in which action it is assisted by a broad thin muscle, *o*, which, situated just under the skin, comes up from the neck; *l* draws the lower lip downward; and *i* is the circular muscle which closes the lips, and thrusts them out in pouting. At *h* is a short muscle which is fastened to the sockets of the teeth, and has its fibres ending in the skin of the chin. It therefore draws the chin up when it contracts. It has so much agency in the expression of scorn and contempt that it has been called the **superbus**. It is by the action of this muscle, together with the circular muscle *i*, that the expression termed pouting is produced.

FIG. 21.

A. Calmness. *B.* Gravity. *C.* Levity.

FIG. 21.—A French writer on art, Humbert de Superville, has shown in a very simple manner the effect of horizontal, downward, and upward lines in changing expression. *A* represents calmness, endurance, and imperturbability; *B*, gravity, sadness and pain; *C*, levity, gayety and inconstancy. The expressions of the face have also suggested comparisons with styles of architecture. Horizontal, regular, and parallel lines, as in *A*, express the calm and massive endurance of Egyptian temples; oblique descending lines, as in *B*, express sadness, as in the form of the pyramids, which were used for tombs; oblique ascending lines, as in *C*, express lightness and gayety, as in the Chinese architecture, which seems to European eyes almost comical and provokes the smile which it represents. The similitude may be extended even to trees, those with drooping branches being preferred for cemeteries; as the weeping-willow and drooping pines. Trees with horizontal branches appear calm and majestic. Those with oblique ascending branches seem gay and frisky, the comedians of vegetable nature. These are, no doubt, very superficial associations, but even the superficial may be suggestive in matters of mere appearance.

FIG. 22.

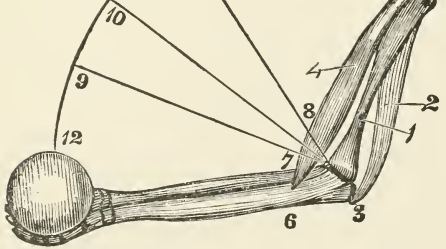

FIG. 22.—**The Motor Mechanism.**—1. The humerus. 2. The muscle by which the joint is straightened. 3. Its insertion. 4. The muscle by which the elbow is bent. 5. Its origin. 6. Its insertion. When the muscle 4 contracts by an amount represented by 7, 8, the amount of motion of the ball will be represented by 9, 11. There is a loss of power which is compensated by an increase of motion.

Fig. 23.

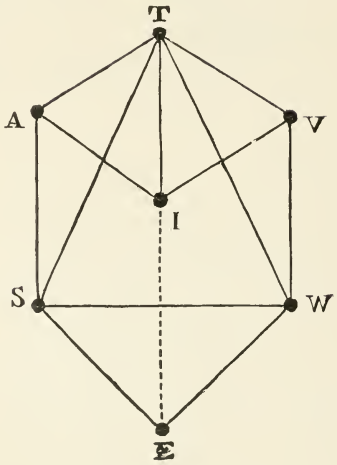

Fig. 23.—Language Associations.—In this diagram

I = a Sensor Impression ;
A = the Auditory Centre ;
T = the Tactile Centre ;
V = the Visual Centre ;
S = the Speaking Centre ;
W = the Writing Centre ;
E = the Expression through the Motor Centres *S* and *W*.

INDEX.

The numbers all refer to pages.

THE GOVERNMENT

WHAT IT IS; WHAT IT DOES

By SALTER STORRS CLARK

Price, 75 cents

THIS text-book, prepared especially for use in high schools, covers the whole field of government. It furnishes a unique presentation of the subject, treating of the principles of general government before considering those of local government.

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Who Does It. The third part explains the American system of central government, and local government by the people. It discusses voting; state constitutions; the United States Constitution; the relations of nation, state, county, township, and city to each other; with a sketch of the whole world in its relation to free government.

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The Appendix. At the end of the book is a list of the chief nations of the world, arranged under their different forms of government; a table of the legislatures of these countries, showing their composition; condensed descriptions of the methods of government of the most important countries; a table showing the subjects over which Congress and the state legislatures respectively have jurisdiction; the text of the United States Constitution; and an abstract of a state constitution.

Unusual Features. On almost every phase of the subject, comparison is made between the United States and the rest of the world, in this way giving an outline of every kind of government and of the political condition of the entire world. The subject of government is presented as a science, a complete and sensible system of interdependent parts, defined limits, and a single object—the good of the people, rather than a haphazard record of powers and happenings. The book also measures and emphasizes the comparative importance of the different governmental functions. Its method of treatment is well suited to encourage independent thought and personal research. This appears not only in the Supplementary Work at the end of each chapter, but also in the problems of government suggested at intervals. Maps and diagrams are used, besides suggestive illustrations, to reënforce the text.

AMERICAN BOOK COMPANY, PUBLISHERS

Outlines of Botany

FOR THE

HIGH SCHOOL LABORATORY AND CLASSROOM

BY

ROBERT GREENLEAF LEAVITT, A.M.
Of the Ames Botanical Laboratory

Prepared at the request of the Botanical Department of Harvard University

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LEAVITT'S OUTLINES OF BOTANY. Cloth, 8vo. 272 pages . $1.00

With Gray's Field, Forest, and Garden Flora, 791 pp. . . 1.80

With Gray's Manual, 1087 pp. 2.25

This book has been prepared to meet a specific demand. Many schools, having outgrown the method of teaching botany hitherto prevalent, find the more recent text-books too difficult and comprehensive for practical use in an elementary course. In order, therefore, to adapt this text-book to present requirements, the author has combined with great simplicity and definiteness in presentation, a careful selection and a judicious arrangement of matter. It offers

1. A series of laboratory exercises in the morphology and physiology of phanerogams.
2. Directions for a practical study of typical cryptogams, representing the chief groups from the lowest to the highest.
3. A substantial body of information regarding the forms, activities, and relationships of plants, and supplementing the laboratory studies.

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